AM/FM STEREO RECEIVER

SX-650

SERVICE MANUAL

PIONEER®

MODEL SX-650 COMES IN FOUR VERSIONS DISTINGUISHED AS FOLLOWS:

Type	Voltage	Remarks
KC	120V	CSA (Canada) approved.
KU	120V	UL (U.S.A.) approved.
HG	220V and 240V (Switchable)	SEMKO (Sweden), NEMKO (Norway), DEMKO (Denmark) and EI (Finland) approved.
S	110V, 120V, 220V and 240V (Switchable)	General export model

This Service Manual is applicable the model SX-650/KCU.

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1. SPECIFICATIONS

Semiconductors

FET ..... 1 ICs 7
Transistors ..... 29 Diodes 29

Amplifier Section

Continuous Power Output from 20 Hertz to 20,000 Hertz.
(Both channels driven) .... 35 watts per channel (8 ohms)
35 watts per channel (4 ohms)
Continuous Rated Power Output .. No more than 0.3%
18 watts per channel power
output, 8 ohms ..... No more than 0.05%
1 watt per channel power
output, 8 ohms ..... No more than 0.05%
Intermodulation Distortion (50Hertz: 7,000Hertz=4:1, from AUX)
Continuous Rated Power Output .. No more than 0.3%
18 watts per channel power
output, 8 ohms ..... No more than 0.05%
1 watt per channel power
output, 8 ohms ..... No more than 0.05%
Dumping Factor
(20 Hertz to 20,000 Hertz 8 ohms) 30
Input (Sensitivity/Impedance)
PHONO ..... 2.5mV/50k ohm
MIC ..... 7mV/50k ohms
AUX ..... 150mV/50k ohms
TAPE PLAY 1 ..... 150mV/50k ohms
TAPE PLAY 2 ..... 150mV/50k ohms
TAPE PLAY 2 (DIN connector) ... 150mV/50k ohms
PHONO Overload Level (T.H.D. 0.1%) ... 200mV (1kHz)
Output (Level/Impedance)
TAPE REC 1 ..... 150mV
TAPE REC 2 ..... 150mV
TAPE REC 2 (DIN connector) ..... 30mV/80k ohms
SPEAKER ..... A, B, A+B
HEADPHONES ..... Low Impedance
Frequency Response
PHONO (RIAA equalization) ..... 30 Hertz to 15,000 Hertz ±0.3dB
AUX, TAPE PLAY ..... 10 Hertz to 50,000 Hertz $^{+0}_{-1}$ dB
Tone Control
BASS ..... +8dB, –7dB (100Hz)
TREBLE ..... +7dB, –6dB (10kHz)
Filter
HIGH 6kHz (6dB/oct.)
Loudness Contour (Volume control set at –40dB position) ..... +6dB (100Hz), +3dB (10kHz)
Hum and Noise (IHF, short-circuited, A Network, rated power)
PHONO 70dB
AUX, TAPE PLAY 90dB

FM Section

Usable Sensitivity MONO 10.7dBf (1.9μV)
STEREO 19.0dBf (4.9μV)
50dB Quieting Sensitivity
MONO 15.0dBf (3.1μV)
STEREO 38.0dBf (44μV)
Signal to Noise Ratio at 65dBf
MONO 70dB
STEREO 65dB
Distortion at 65dBf 100Hz ... MONO 0.15%
STEREO 0.3%
1kHz ... MONO 0.15%
STEREO 0.3%
6kHz ... MONO 0.4%
STEREO 0.4%
Frequency Response ..... 30Hz to 15,000Hz $^{+0.2}_{-2.0}$ dB
Capture Ratio 1.0dB
Alternate Channel Selectivity 60dB
Spurious Response Ratio 75dB
Image Response Ratio 65dB
IF Response Ratio 90dB
AM Suppression Ratio 50dB
Muting Threshold 14dBf (2.8μV)
Stereo Separation 40dB (1kHz)
30dB (30Hz ~ 15kHz)
Subcarrier Product Ratio 62dB
SCA Rejection Ratio 62dB
Antenna Input ..... 300 ohms balanced
75 ohms unbalanced

AM Section

Sensitivity (IHF, Ferrite antenna) 300μV/m
(IHF, Ext. antenna) 15μV
Selectivity 35dB
Signal to Noise Ratio 50dB
Image Response Ratio 40dB
IF Response Ratio 65dB
Antenna ..... Built-in Ferrite Loopstick Antenna

Miscellaneous

Power Requirements 120V, 60Hz
Power Consumption ..... 130W (UL), 310W (max.)
240VA (CSA)
Dimensions ..... 480(W)x140(H)x371(D)mm
18-7/8(W)x5-7/8(H)x14-5/8(D)in.
Weight Without package ..... 13.1kg (28 lb 13 oz)
With package ..... 14.7kg (32 lb 5 oz)

Furnished Parts

FM T-type Antenna 1
Operating Instructions 1

NOTE:
Specifications and design subject to possible modification without notice, due to improvements.

2. FRONT PANEL FACILITIES

POWER INDICATOR LAMP

Lights when SPEAKERS switch is moved to any other position from POWER OFF, and AC power is supplied to the receiver.

SPEAKERS SWITCH

Functions as both power switch and speaker selection switch.

POWER OFF: AC power is off.

A: Sound will be heard from speakers connected to A speaker terminals.

OFF: No sound will be heard from speaker systems. This position should be used when listening with headphones.

B: Sound will be heard from speakers connected to B speaker terminals.

A + B: Sound will be heard from speakers connected to A terminals and from speakers connected to B terminals.

PHONES PLUG

Insert headphone plug into this jack when headphone listening is desired. In this case, SPEAKERS switch should be in OFF position.

BASS, TREBLE CONTROLS

When turned clockwise from the OFF position, response in bass or treble range, respectively, is boosted. Turning counterclockwise attenuates response. At the OFF position the tone control circuit is bypassed and frequency response is flat.

HIGH FILTER SWITCH

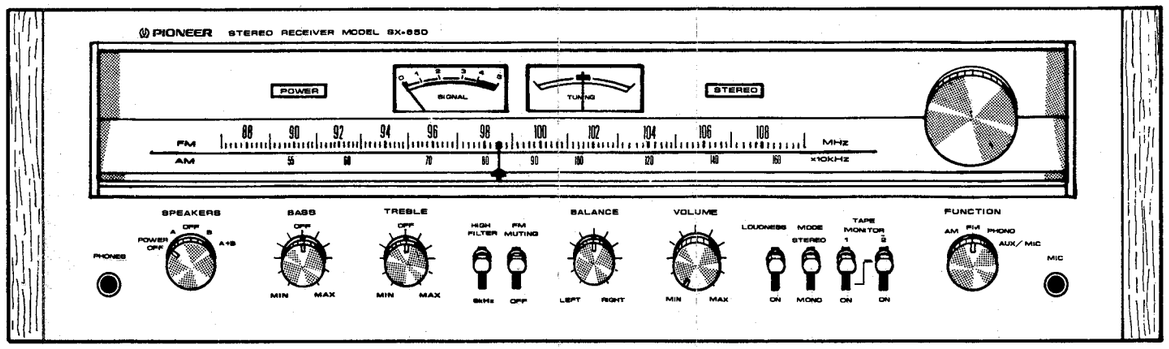
For high frequency noise due to scratches on the record, place switch in 6kHz position. This will provide 6dB/octave attenuation at frequencies above 6kHz. For normal operation switch should be in OFF (upper) position.

FM MUTING SWITCH

For selection of FM broadcasts, the switch should be in ON (upper) position. When switch is in the ON position, unpleasant interstation noise is suppressed. When signal strength is poor, it may not be possible to bring in the desired station if MUTING is ON. In this case, place it in the OFF (lower) position.

SIGNAL METER

For FM and AM reception, turn TUNING knob until needle of the SIGNAL meter is deflected a maximum to the right.



BALANCE CONTROL

For adjustment of relative output levels of L and R channels of speaker systems or headphones. Clockwise rotation from center position increases volume of R over L channel. Counterclockwise ration increases volume of L channel over R.

VOLUME CONTROL

For adjustment of speaker or headphone output level. Level increases with clockwise rotation of the knob.

FM TUNING METER

With the needle of the SIGNAL meter deflected to the right, fine-tune FM broadcast by centering needle of the TUNING meter.

LOUDNESS SWITCH

For listening at low volume level, placing this switch in the ON position will boost response in low and high frequency ranges.

The response of the human ear to low and high sound volumes is different. At low volume levels, the ear is relatively insensitive to sounds at either extreme of the frequency scale. By means of the LOUDNESS switch, these sounds are given additional amplification.

STEREO INDICATOR LAMP

Lights when FM stereo broadcast is being received.

TUNING KNOB

For selection of FM or AM stations.

FUNCTION SELECTOR

For selection of program source.

AM: AM broadcasts

FM: FM broadcasts

PHONO: Playing records

AUX/MIC: For use of component connected at AUX terminals of receiver, or microphone which may be plugged into MIC jack.

NOTE:
AUX and MIC program sources cannot be used simultaneously. When using AUX hi-fi component, microphone should be disconnected.

MIC JACK

Accepts standard 6mmφ plug. Microphone input signal enters both R and L channels.

TAPE MONITOR SWITCHES

1: For monitoring of playback or record mode of tape deck connected to TAPE 1 terminals (REC or PLAY).

2: For monitoring of playback or record mode of tape deck connected to TAPE 2 terminals (REC or PLAY).

NOTE:
When not monitoring record or playback mode of a tape deck, both switches should be in OFF (upper) position. If either 1 or 2 switch is in ON (lower) position, the program source selected by the FUNCTION switch will not be heard through speaker system or headphones.

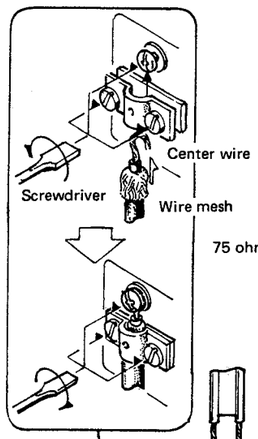
MODE SWITCH

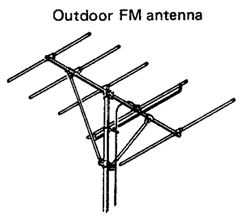
For selection of stereophonic or monophonic mode of playback. In normal operation, switch should be in STEREO position. In the MONO position, R and L channel signals will be mixed, and sounds coming from speakers of both channels will be the same.

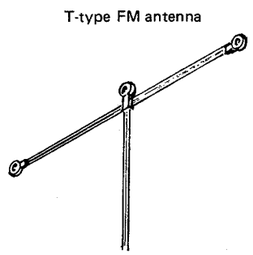
NOTE:
Recording stereophonically with the MODE switch in the MONO position may cause channel separation to deteriorate.

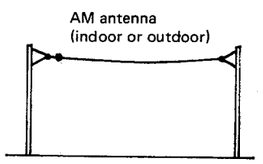
3. CONNECTION DIAGRAM

REAR VIEW





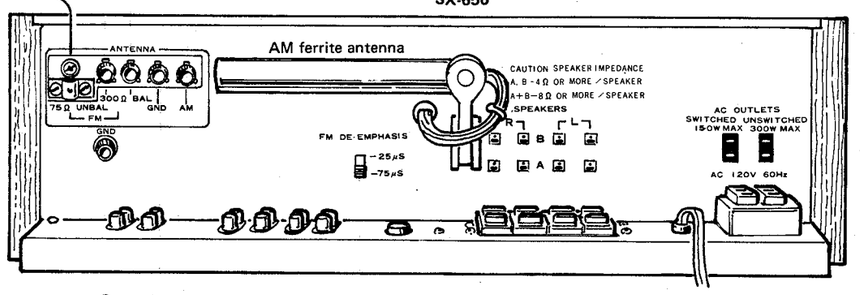




75 ohm coaxial cable

300 ohm feeder cable

Please see following section, "Antenna and Ground Connections," for instructions regarding FM antenna connection.

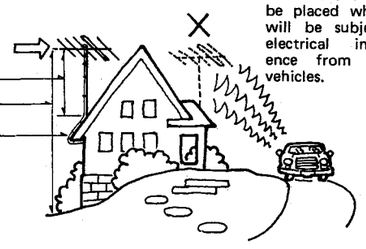


Ground

FM de-emphasis switch: For normal FM reception this switch should be set on "75μS" (unit is set to this when leaving factory). The "25μS" setting is used only when listening to FM Dolby* transmissions. When listening to FM Dolby transmissions, it will be necessary to use an NR adaptor which can be purchased separately. More detailed instructions will be found in the section, "FM Dolby Reception."

ANTENNA PLACEMENT

Make note of the following points when choosing a location for the FM antenna.

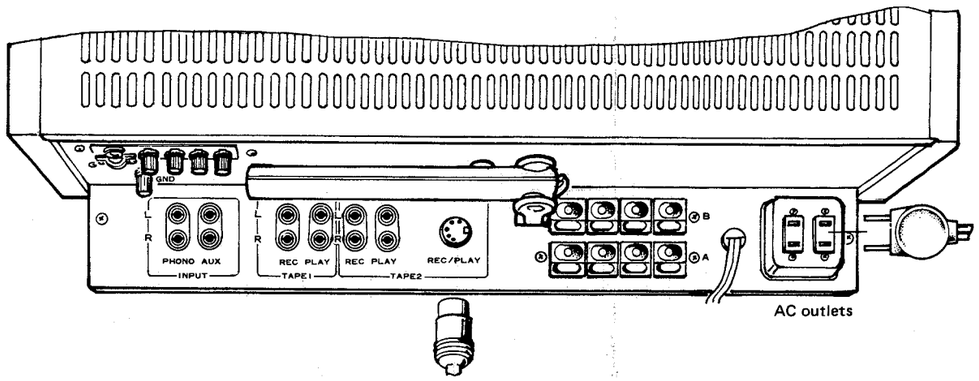


Antenna should not be placed where it will be subject to electrical interference from motor vehicles.

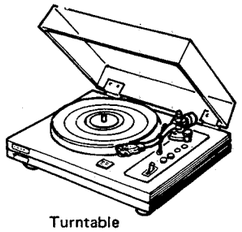
- Feeder wire and cable should be insulated at mounting points.
- Length should be a short as possible.
- Feeder wire should not be coiled.

TOP VIEW

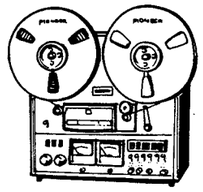
Accessory AC outlets:
Switched . . . . . Power to this outlet is controlled by the SX-650 power switch. When power to the receiver is "ON", this outlet will provide AC current (150 watts maximum).
Unswitched . . . . . Power to this outlet is not controlled by the SX-650 power switch. As long as the power cord is plugged into a live outlet, this outlet will supply AC current (maximum 300 watts).



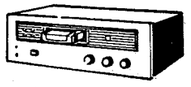
AC outlets



Turntable

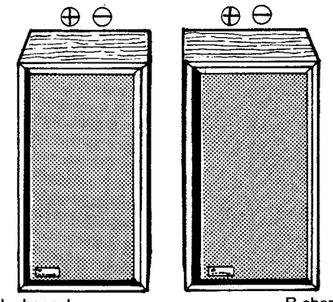


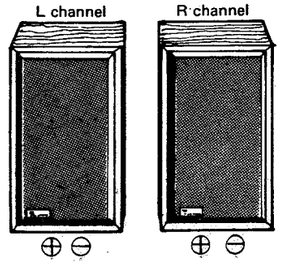
Tape deck



Cartridge tape deck
(for playback)

Tape deck





4. CIRCUIT DESCRIPTIONS

4.1 TUNER SECTION

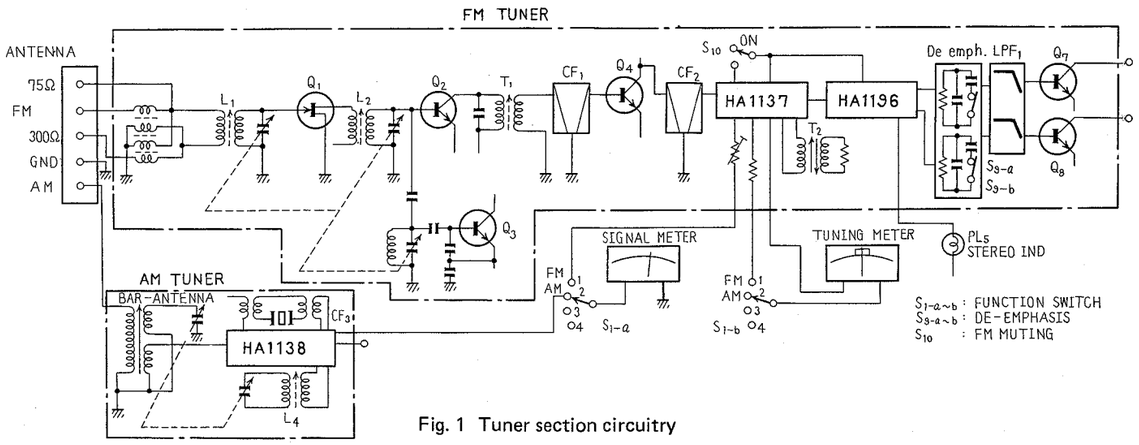


Fig. 1 Tuner section circuitry

AM Tuner

Composed of a single IC (HA1138) and single element ceramic filter, A 2-gang variable capacitor is employed with one stage providing tuning between the antenna and RF amplifier and the other stage tuning the local oscillator. The RF amplifier itself is not tuned but feeds directly to the mixer followed by a 2-stage IF amplifier.

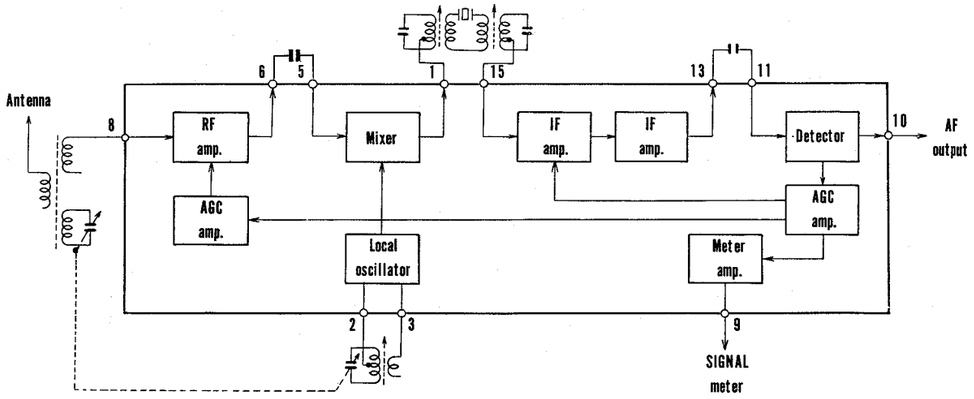


Fig. 2 HA1138 block diagram

FM Front End

A linear 3-gang variable capacitor is used in a single stage FET RF amplifier. The FET possesses high input impedance compared with a transistor, and allows simple coupling with the input tuning circuit, plus a significant advantage in terms of noise.

The local oscillator is a variation of a Clapp circuit and its excellent temperature compensation provides frequency stability even where no AFC is used. Local oscillator voltage is passed through a low value capacitor to the mixer transistor base.

FM IF Amplifier

This section consists of two dual element ceramic filters, an IC (HA1137) and a transistor. Ceramic filters possess excellent selectivity, which cannot be obtained with L-C type tuning filters. The circuit composition uses this quality to provide outstanding selectivity. Excellent sensitivity and S/N ratio are also achieved by employing a transistor and a high density IC (HA1137). The HA1137 contains IF limiter amplifier, FM detector, meter drive and muting circuits.

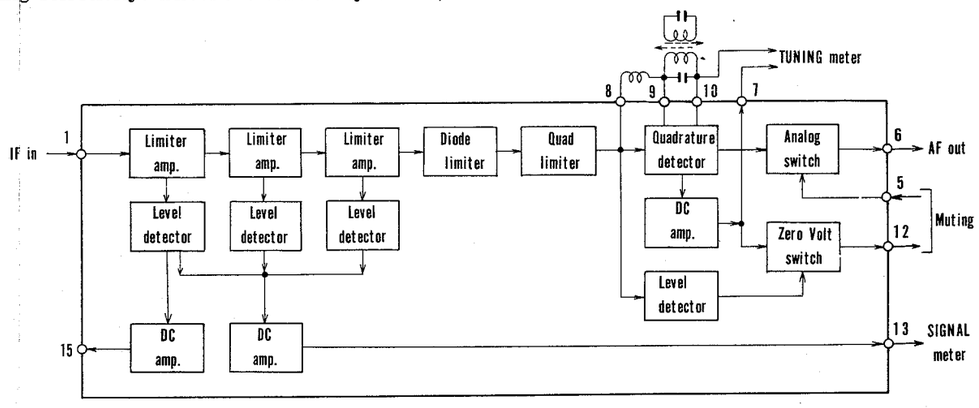


Fig. 3 HA1137 block diagram

Multiplex Decoder

Composed of three sections and employs an IC (HA1196) with a block diagram as shown in Fig. 4.

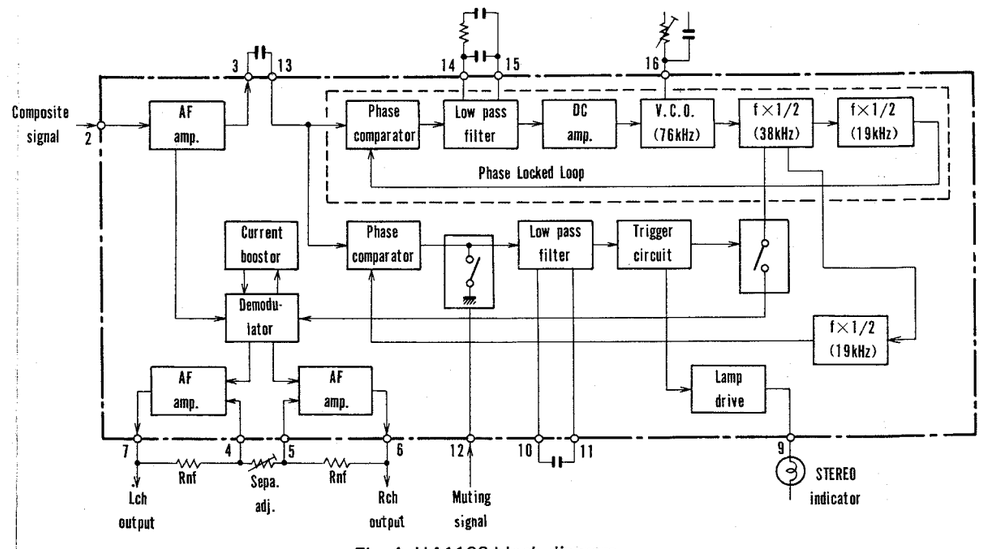


Fig. 4 HA1196 block diagram

1. Switching Signal Generator

A PLL (phase locked loop) system is employed. 76kHz is generated by the VCO (voltage controlled oscillator: an oscillator in which frequency is controlled by a voltage) and converted into 38kHz by a frequency divider, and then divided again to 19kHz. This signal and the stereo pilot component (19kHz) of the detected signal are applied to a phase comparator where the difference between them is converted into a voltage. By feeding this voltage back to the VCO, the oscillation signal is locked to the pilot signal.
This loop is termed PLL and a 38kHz switching signal synchronized to the pilot signal is obtained and employed as the switching signal.

2. Automatic Stereo Detector

Presence or absence of the pilot signal is detected by 19kHz obtained from the PLL and phase comparator. A voltage is then obtained at the phase comparator that is proportional to the pilot signal amplitude. This voltage operates a trigger circuit. If the pilot signal is present, the switching signal is applied to the demodulator and the Stereo indicator lights up. However, if the FM muting signal is also applied to pin 12, the detector circuit goes to ground. Therefore a switching signal to the demodulator is not supplied and mono reproduction is obtained.

3. Demodulator

This is a switching circuit employing two differential amplifiers (Fig. 5). The composite signal is applied to base of Q3. Q1 and Q2 are alternately switched ON and OFF by the switching signal.

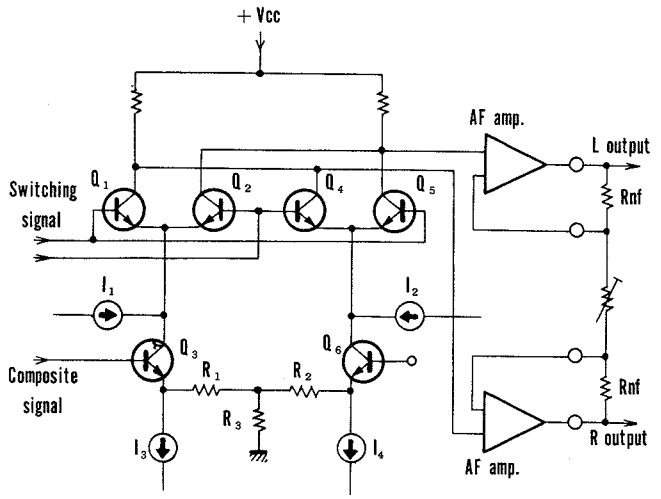


Fig. 5 Basic demodulator circuitry

The composite signal amplified at Q3 is demodulated by switching of Q1 and Q2. Q6 and Q3 are loosely coupled at their emitters by R1 — R3. Q6 is driven in opposite phase to Q3, the small composite signal is demodulated by switching of Q4 and Q5. The demodulated signals in opposite phase are composed with the collector of Q1 and Q2, crosstalk is cancelled.
Adequate current flow is required in Q3 and Q6 for low distortion. However, if the base bias voltage is raised, the voltage swing at the collector is reduced and clipping occurs (power supply voltage is limited by the IC voltage tolerance). For this reason, current from an external source is inserted at Q3 and Q6 collectors to become I1 and I2. The same currents are obtained as I3 and I4 from the emitters. Q3 and Q6 therefore operate with adequate current and distortion at this stage is remarkably reduced.
A feedback amplifier amplifiers the demodulated signal to produce the IC output.

4.2 PHONO EQUALIZER AMPLIFIER

IC (TA7136P1) is used with independent left and right channels. Grade G styrene capacitors (±2%) and grade J metal film resistors (±5%) comprise the equalizer elements, yielding an RIAA deviation that is within 0.3dB from 30Hz to 15kHz.

NOTE:
Fig. 6-A shows the discrete component type while Fig. 6-B shows the IC type.

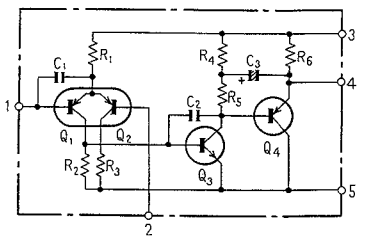


Fig. 6-A

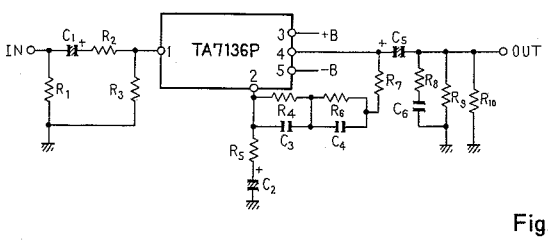


Fig. 6-B

Fig. 6 PHONO equalizer circuitry

4.3 MICROPHONE CIRCUIT

A single transistor amplifier (monophonic) is provided in addition to the phono equalizer amplifier. A selector switch cuts the AUX jack input when a plug is inserted into the MIC jack. The amplified microphone signal is then supplied to both left and right channels. The FUNCTION switch is set to the AUX position when using a microphone.

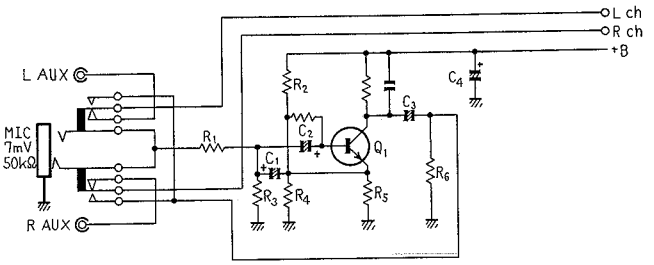


Fig. 7 Microphone circuitry

4.4 TONE CONTROL

CR type tone controls are connected to an amplifier with extremely low output impedance and flat response (IC TA7136, 31dB gain). Bass can be varied in the range of +8dB ~ −7dB (100Hz) and treble in the range of +7dB ~ −6dB (10kHz). Tone controls consist of a newly developed BASS and TREBLE pair. With the BASS control set at center position, the low frequency control circuit becomes a fixed loss circuit without regard to frequency. Signal flow to the high frequency control circuit will be absent when the TREBLE control is set to the center position and a flat frequency characteristic will be obtained.

NOTE:
Equivalent circuit shown in upper figure is obtained with controls at center.

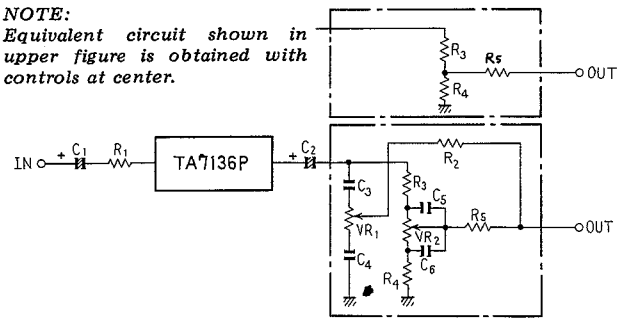


Fig. 8 Tone control circuitry

TREBLE VR

As shown in the Fig. 9 as slider A reaches the ultra-high resistance section (center position) of the resistor element, the VR becomes electrically open and signal flow ceases.

BASS VR

At center position (see Fig. 9) points A, B and C contact, shorting terminals 1, 2 and 4. Since terminals 3 and 4 are connected at the circuit board all terminals (1, 2, 3 and 4) become shorted .

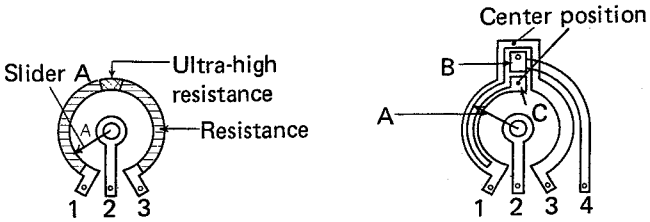


Fig. 9 TREBLE and BASS VR

4.5 POWER AMPLIFIER

This is a basic direct-coupled pure complementary OCL amplifier. Its operation is stabilized by the differential amplifier which is driven by a balanced power supply.

Q1, Q2 form a differential amplifier: 100% d.c. feedback is applied from the junction point of the power stage to the base of Q2 so the potential of the junction point is always maintained at the same level.

The driver and output stages are Darlington connected and a complementry symmetrical circuit is formed using a specially developed hybrid IC (Fig. 10). This ensures dynamic balance at different input levels.

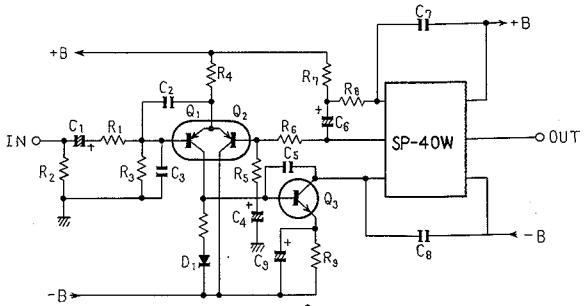


Fig. 10 Power amplifier circuitry

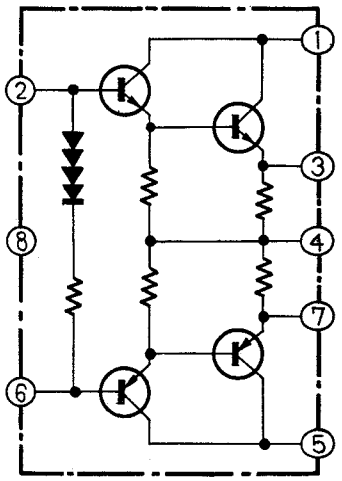


Fig. 11 SP-40W block circuitry

4.6 PROTECTION CIRCUIT

This circuit protects the power transistors in case of overload, the speakers in case of power amplifier malfunction, and also performs a muting function when the power supply is operated ON-OFF. The protection circuit is composed of three sections (Fig. 12).

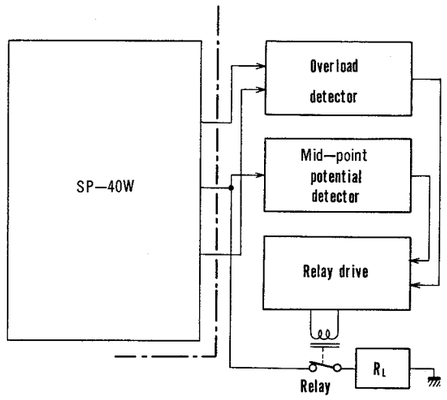


Fig. 12 Block diagram for protection circuitry

1. Relay Drive Circuit

The relay which connects the output circuits is driven by this circuit. It also performs a muting function to prevent unpleasant noise during ON-OFF operation of the power supply and cuts the output circuit on command from the detector circuit.

Muting Operation

When the power supply is set from OFF to ON, Q6 base is reverse biased through D6 and R19 — R21, turning Q6 OFF. Q7 base potential rises when C4 charges through R22 and R23, and Q7 turns ON several seconds later. The collector current of Q7 then flows through the relay coil, operating the relay to turn on the power amplifier output circuit. The reverse bias of Q6 base from D6 and R19 — R21 disappears when the power supply is set from ON to OFF. Q6 remains ON due to residual power supply voltage. C4 very rapidly discharges, Q7 base potential drops and Q7 becomes OFF. The relay releases and the power amplifier output circuit will be cut OFF.

NOTE:
Q5 is normally OFF due to base bias and does not participate in the muting operation.

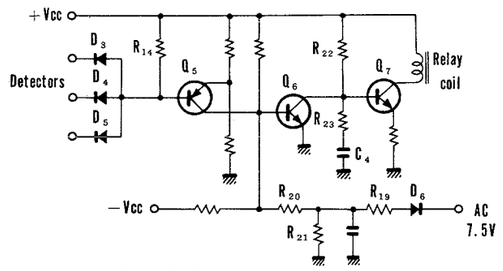


Fig. 13 Relay driver circuitry

Operation by Detector Circuit Command

Commands from the detector circuits pass through one of D3, D4 or D5 and are applied in the form of a current flow. Q5 is normally reverse biased through R14, but when a large current flows through one of these diodes, Q5 base potential declines according to the voltage drop at R14. Q5 then turns ON, Q6 base potential rises and Q6 switches ON. C4 rapidly discharges and Q7 base potential drops, turning Q7 OFF. The relay releases and the power amplifier output circuit will be cut off.

2. Overload Detector Circuit

Shorting of the power amplifier load or a load impedance below the specified value causes a command to be sent to the relay drive circuit. This operating principle is shown in Fig. 14. With the output stage in class B operation and Qa operating on the positive half cycle, Qb will be cut off and the signal current will flow as indicated by the solid arrows in Fig. 14. Point D potential at this time is the point A potential divided by R1 and R3. Also, point C potential is the point A potential divided by RE1 and RL (load). Point D is connected to Q1 base and point C to Q1 emitter through R2 and RE2.

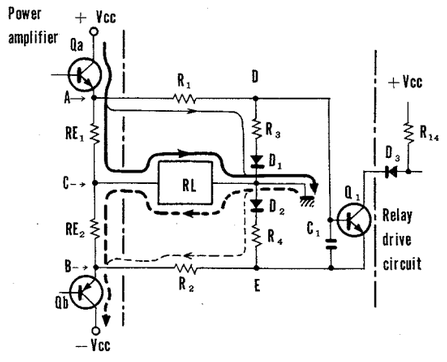


Fig. 14 Basic overload circuitry

When RL is extremely small, the point C potential will be considerably lower than point D. This potential difference forward biases Q1. Q1 switches ON and current flows in D3.
Qb operates in the negative half cycle and Qa is cut off. The signal flows as indicated by the broken line arrows in the center of Fig. 15. Q1 is biased by the potential difference between point C and point E. If RL is extremely small, the point C potential becomes considerably higher than that of point E. Q1 switches ON and current flows in D3. If large current flows in Qa and Qb, Q1 becomes ON by RE1 and RE2 voltage drop, and current flows in D3. C1 prevents faulty operation due to external noise.

3. MID-Point Potential Detector Circuit

If DC potential is produced at the junction point of the power amplifier, the command is sent to the relay drive circuit. Fig. 15 shows this operating principle.

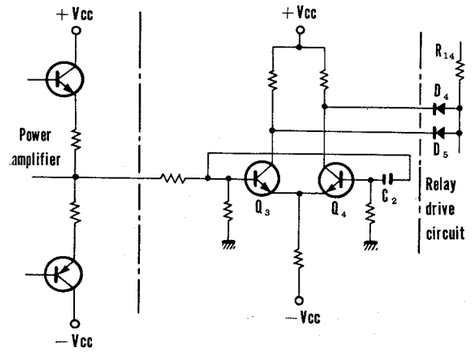


Fig. 15 Basic circuitry for mid-point potential detector

Q3 and Q4 comprise a differential amplifier. When the same input is applied to both input terminals (Q3 and Q4 bases), an output is absent. However, if there is a difference between the terminal inputs, the difference is amplified and becomes the output between the two collectors. During normal operation, an AC signal only is present at the junction point. As C2 reactance is sufficiently low, the same signal is applied to Q3 and Q4 bases, resulting in an absence of output at the collector sides. When a DC potential is produced at the junction point, it becomes the input of Q3 only. If the voltage is negative, Q3 collector current declines. And at Q4 the collector current increases and the potential drops, causing current to flow through D4.
If the DC voltage is positive, Q3 collector current increases and the potential drops, while at Q4 the collector current decreases and potential rises. Current therefore flows through D5.

4.7 POWER SUPPLY

Two windings are provided in the power transformer secondary and each is separately bridge rectified. One of these is sent as ±96VDC to the voltage stabilizer circuit to become 13V, 33V and —34V regulated voltages for supply to each assembly.
The other secondary voltage is bridge rectified and becomes ±36V for supply to the power amplifier power(IC) stage. Extremely low power supply impedance is maintained by a 8,000μF electrolytic capacitor.

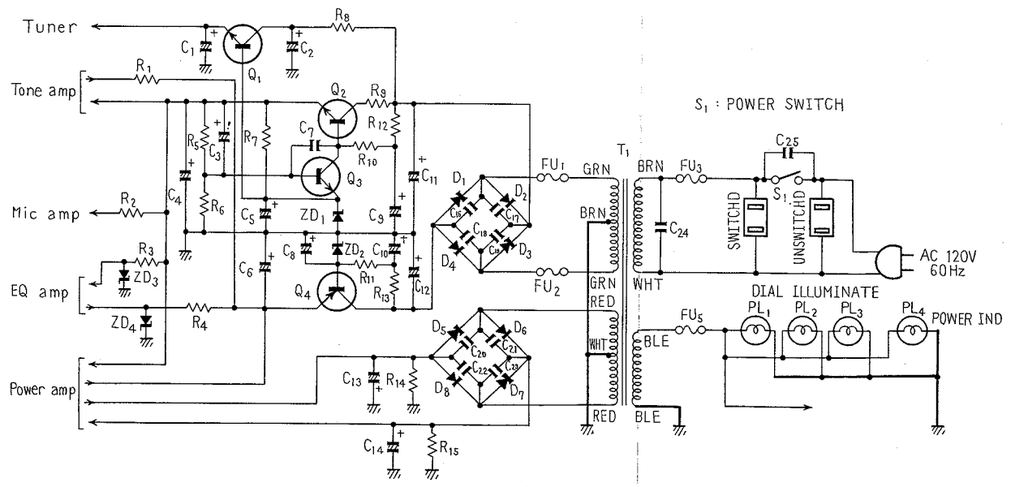
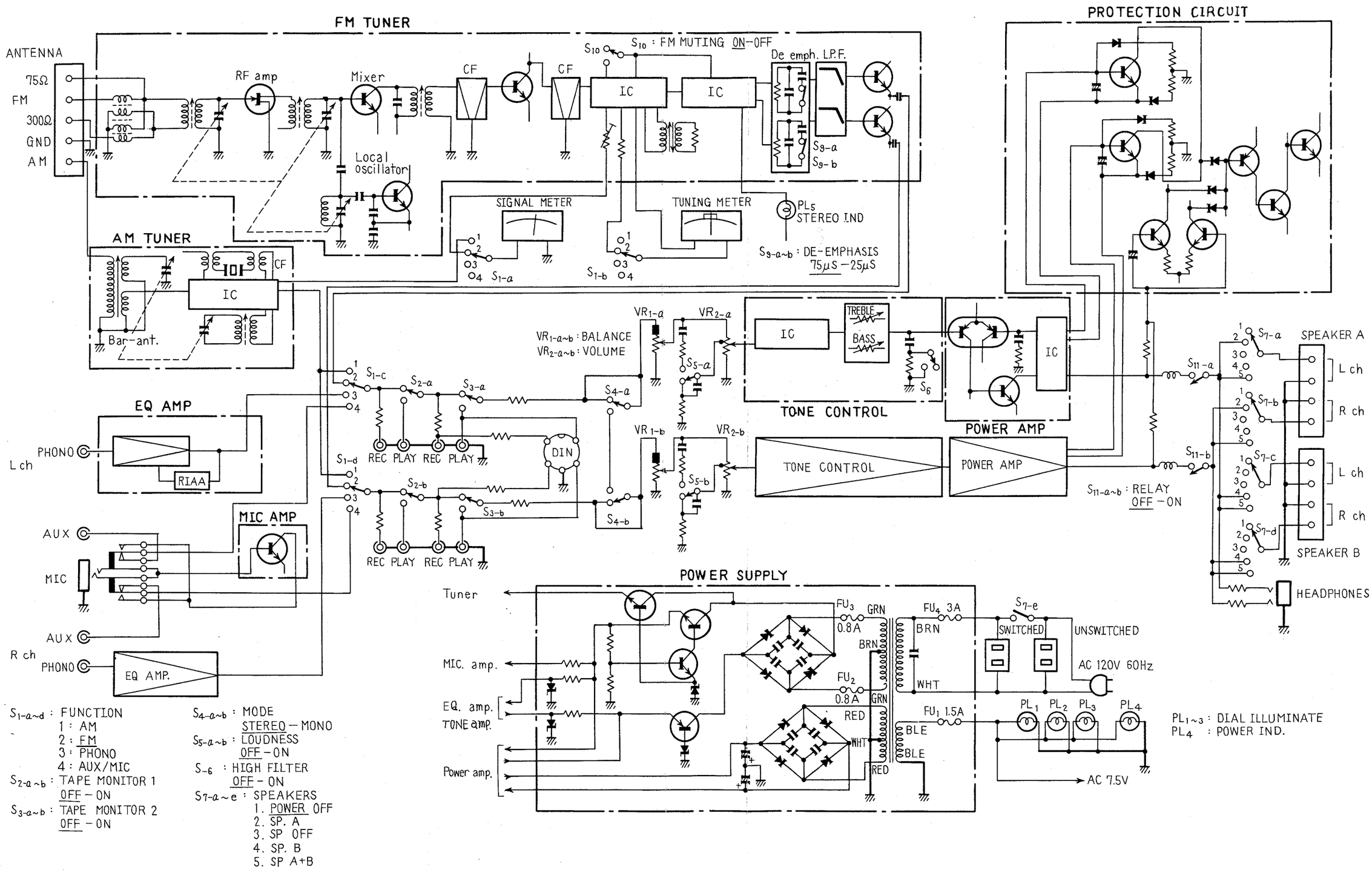


Fig. 16 Power supply circuitry

5. BLOCK DIAGRAM



$S_{1-a\sim d}$: FUNCTION
1 : AM
2 : FM
3 : PHONO
4 : AUX/MIC

$S_{2-a\sim b}$: TAPE MONITOR 1
OFF - ON

$S_{3-a\sim b}$: TAPE MONITOR 2
OFF - ON

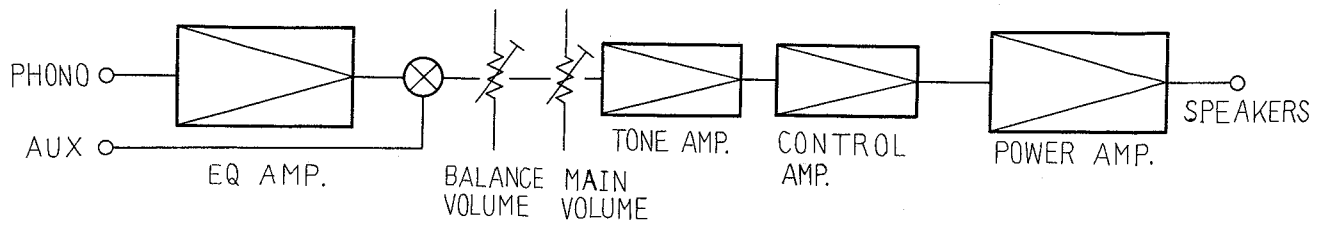
$S_{4-a\sim b}$: MODE
STEREO - MONO

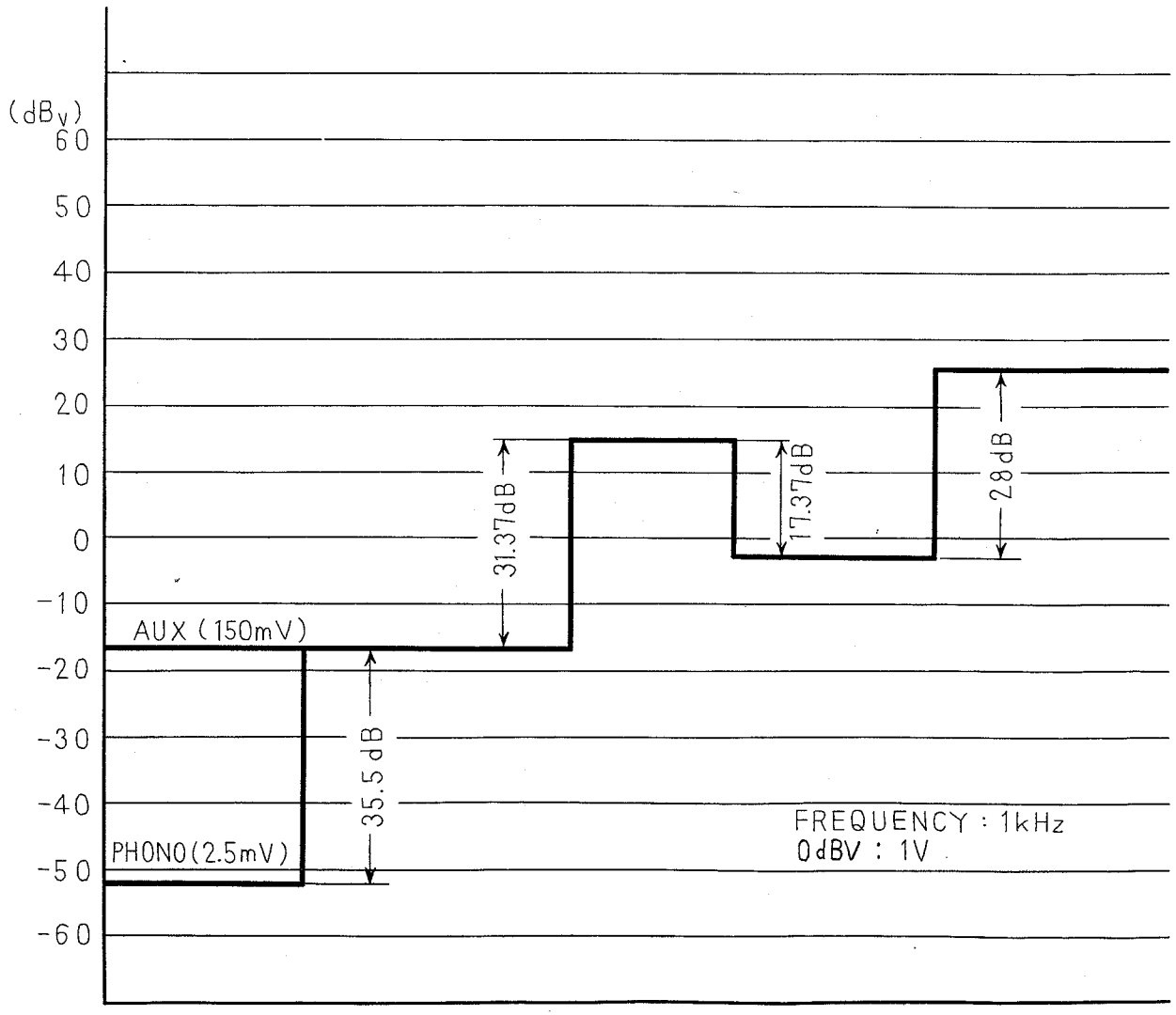
$S_{5-a\sim b}$: LOUDNESS
OFF - ON

S_6 : HIGH FILTER
OFF - ON

$S_{7-a\sim e}$: SPEAKERS
1. POWER OFF
2. SP. A
3. SP OFF
4. SP. B
5. SP A+B

6. LEVEL DIAGRAM

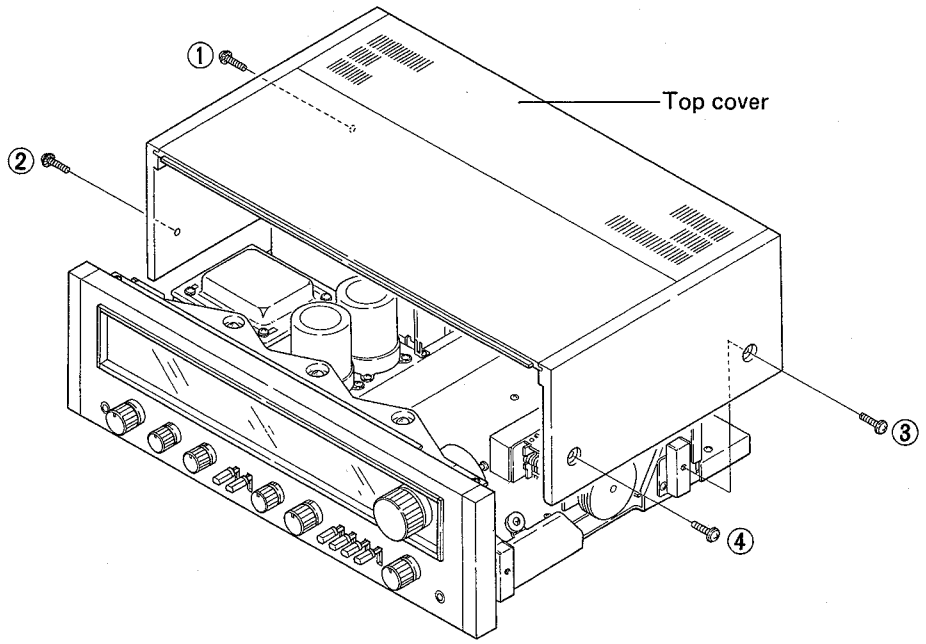




7. DISASSEMBLY

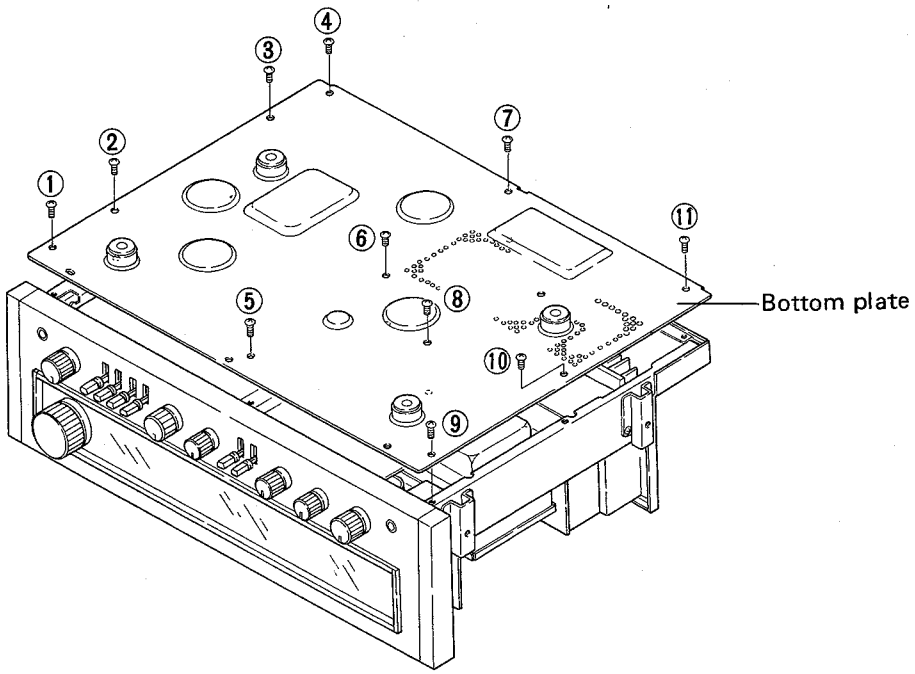
TOP COVER

To remove take out 2 screws on both left and right sides (total of 4 screws).



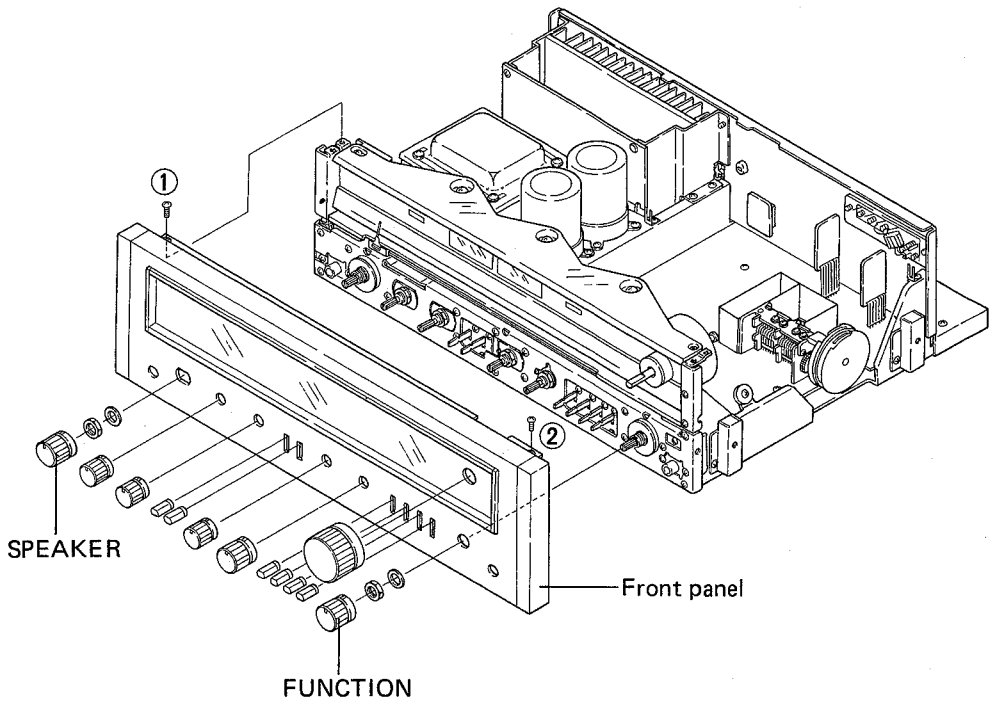
BOTTOM PLATE

To remove take out screws 1 — 11.



FRONT PANEL

Pull off all knobs and remove shaft nuts on SPEAKER and FUNCTION switches. Front panel can then be removed after taking out screws 1 and 2.



8. DIAL CORD STRINGING

1. Remove the wooden cover and the front panel.
2. Turn tuning drum fully clockwise (as viewed from X direction in Fig. 17).
3. Tie on end of cord to stud on inner section of tuning drum (more easily performed by loosening setscrew and temporarily removing tuning drum from shaft).
4. Route cord through tuning drum cutout, make a half turn around the drum, then route in sequence to pulley A-dial pointer-pulley B-pulley C.
5. Wind cord 3 turns clockwise (as viewed from the rear) around tuning shaft, then route to pulley D.
6. Wind cord two turns around tuning drum and tie to spring hook so that tension is applied to the cord.
7. Turn TUNING knob and confirm normal cord motion, then trim off excess cord.
8. With tuning capacitorblades fully closed, move dial needle to starting point (left edge of scale).
9. Apply laquor to tied ends of cord.

DIAL POINTER INSTALLATION CAUTION

Metal portion of dial pointer is plated. If this section is touched directly with the hand and collects fingerprints or other impurities, it is difficult to remove them from aventurine finish. As this is not desirable in terms of both appearance and anticorrosion, take extreme care not to touch the metal section when handling the dial pointer.

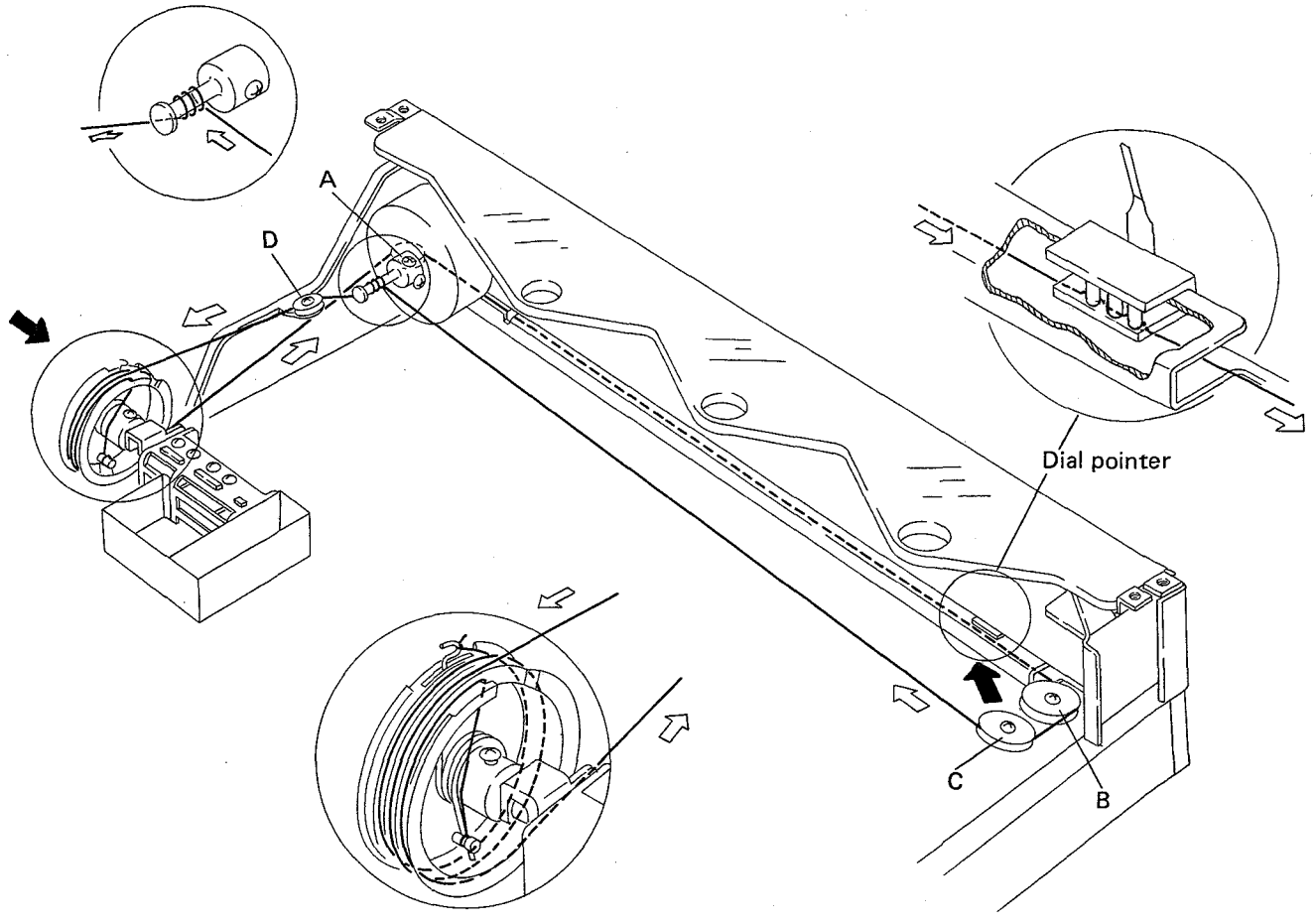
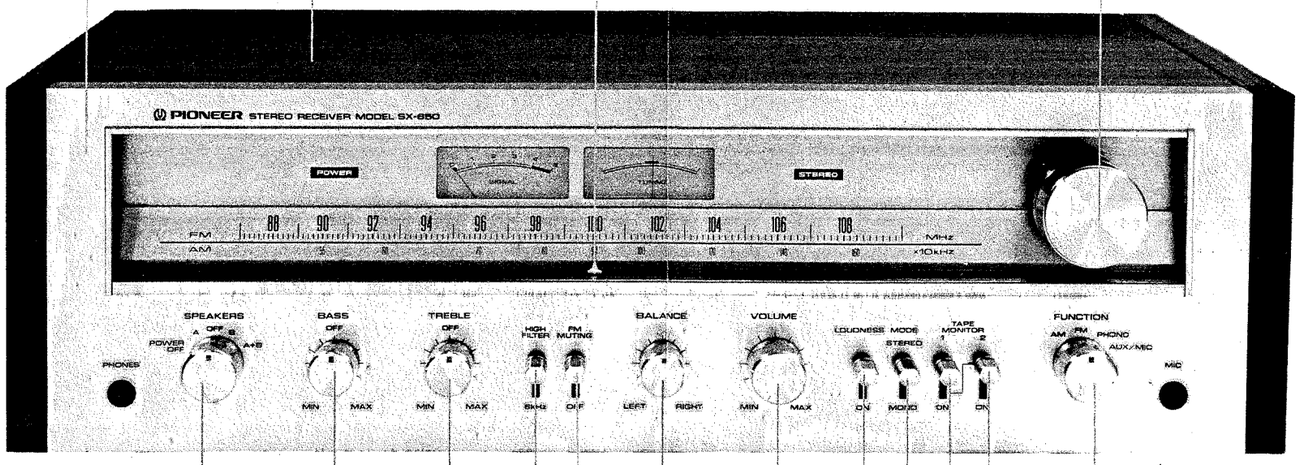


Fig. 17

9. PARTS LOCATIONS

9.1 FRONT PANEL VIEW



Wooden cabinet
AMM-053

Front panel assembly
ANB-444

Knob (SPEAKERS)
AAB-100

Knob (BASS)
AAB-099

Knob (TREBLE)
AAB-099

Knob (HIGH FILTER)
AAD-113

Knob (FM MUTING)
AAD-113

Dial pointer assembly
AAF-048

Knob (TUNING)
AAA-036

Knob (FUNCTION)
AAB-100

Knob (TAPE MONITOR)
AAD-113

Knob (MODE)
AAD-113

Knob (LOUDNESS)
AAD-113

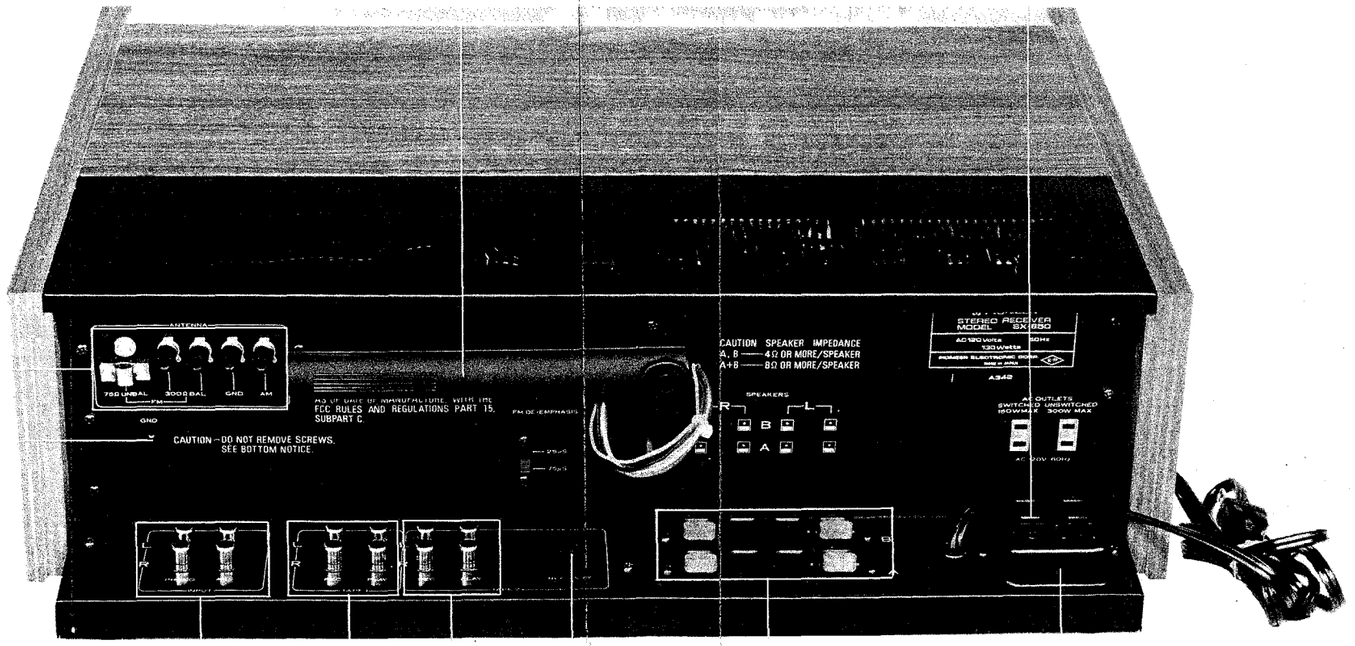
Knob (VOLUME)
AAB-100

Knob (BALANCE)
AAB-099

9.2 REAR PANEL VIEW

Ferrite Bar-antenna
AXB-004

AC socket (AC OUTLET)
AKP-004



Terminal (ANTENNA)
AKA-002

Terminal (GND)
AKE-017

Terminal (INPUT)
AKB-027

Terminal (TAPE 1)
AKB-027

Terminal (TAPE 2)
AKB-027

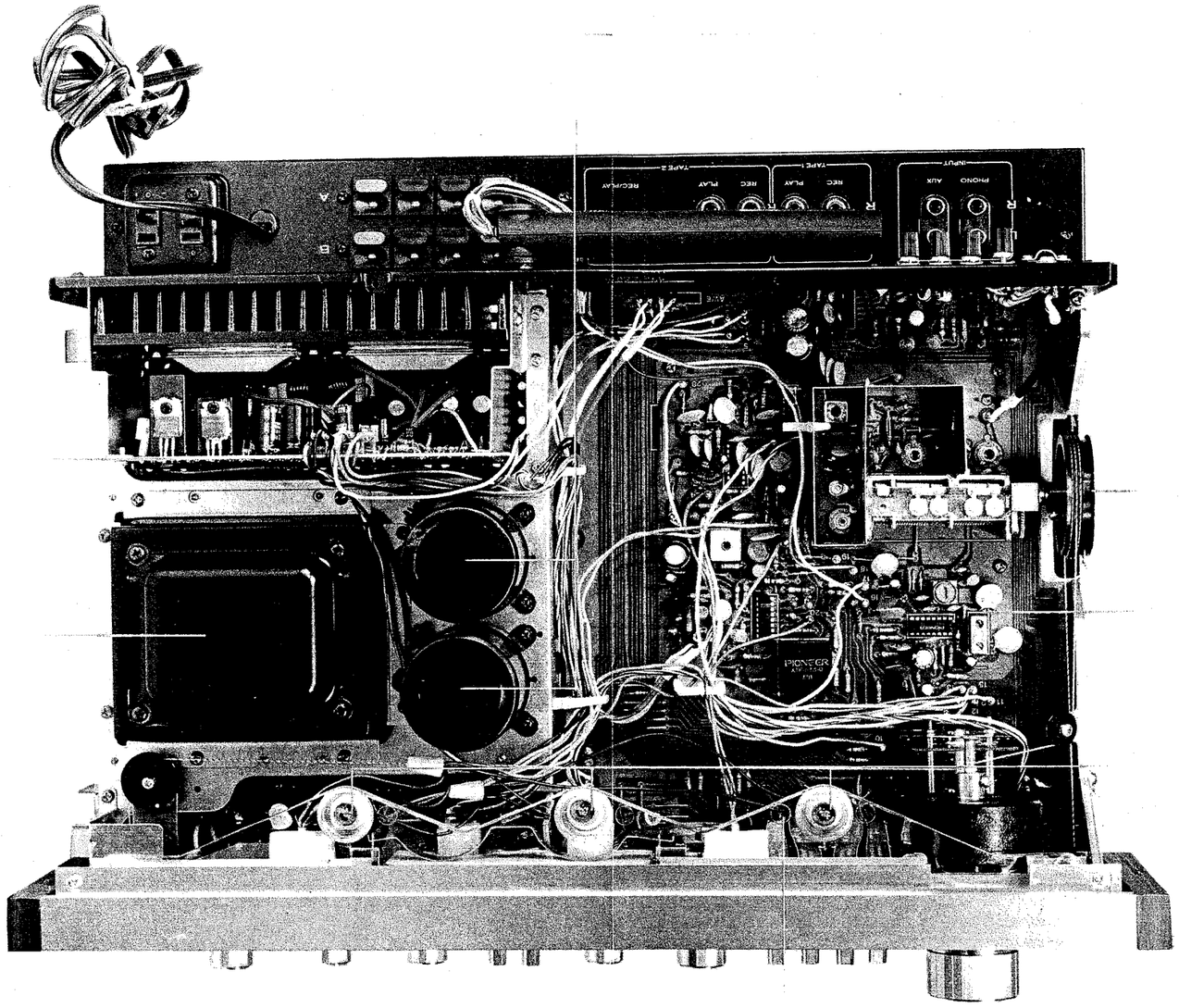
AC cord
ADG-005

Cover
ANF-379

Terminal (SPEAKER)
AKE-029

DIN connector socket
AKP-011

9.3 TOP VIEW



Power amplifier assembly 2
GWR-101

Power transformer
ATT-315 (MODEL KC)
ATT-303 (MODEL KU)

Electrolytic capacitor
ACH-071

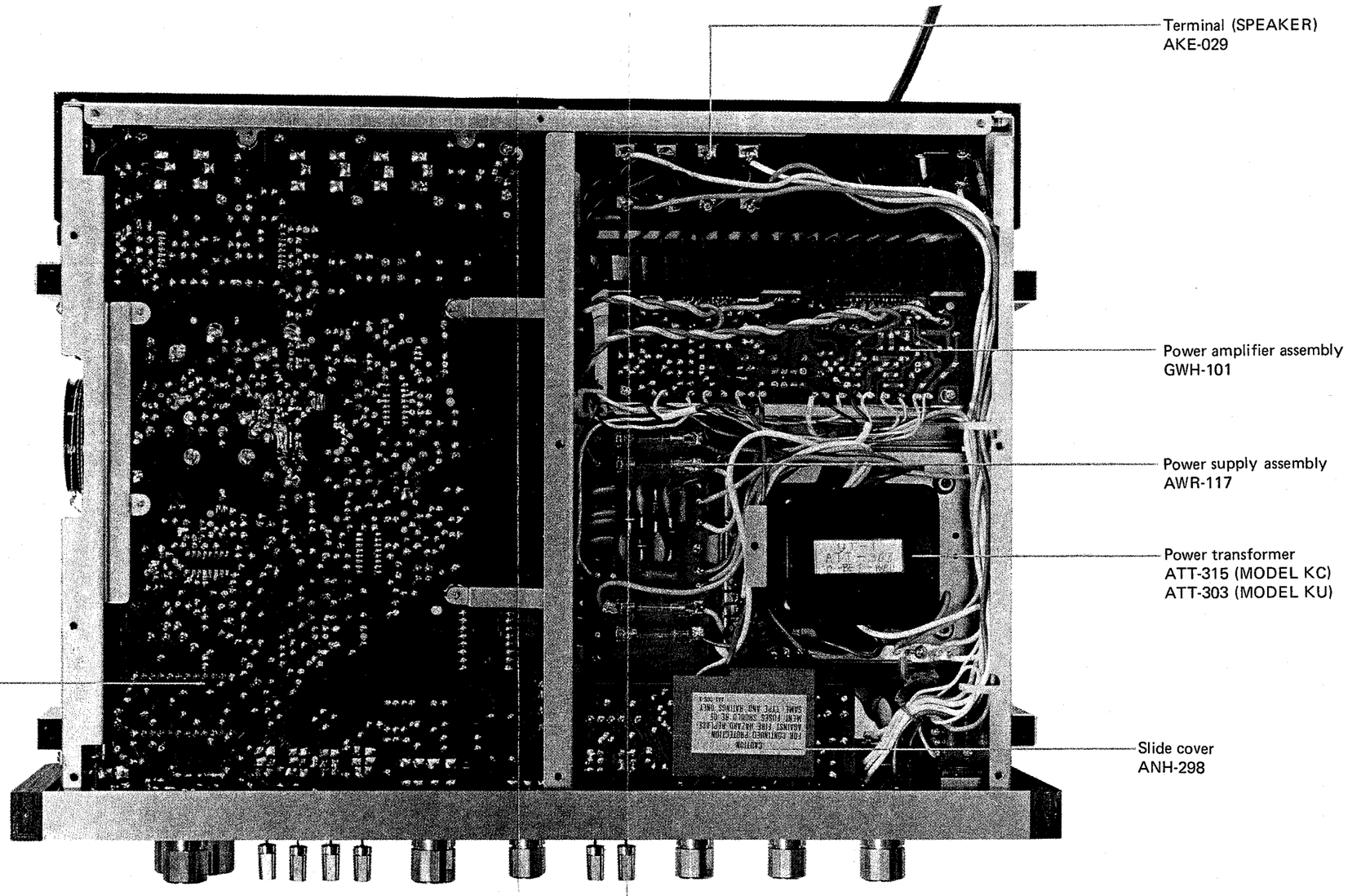
Tuning drum assembly
AXA-070

Tuner and AF assembly
AWE-075

Lamp assembly
AEL-060

Dial scale plate
AEC-251

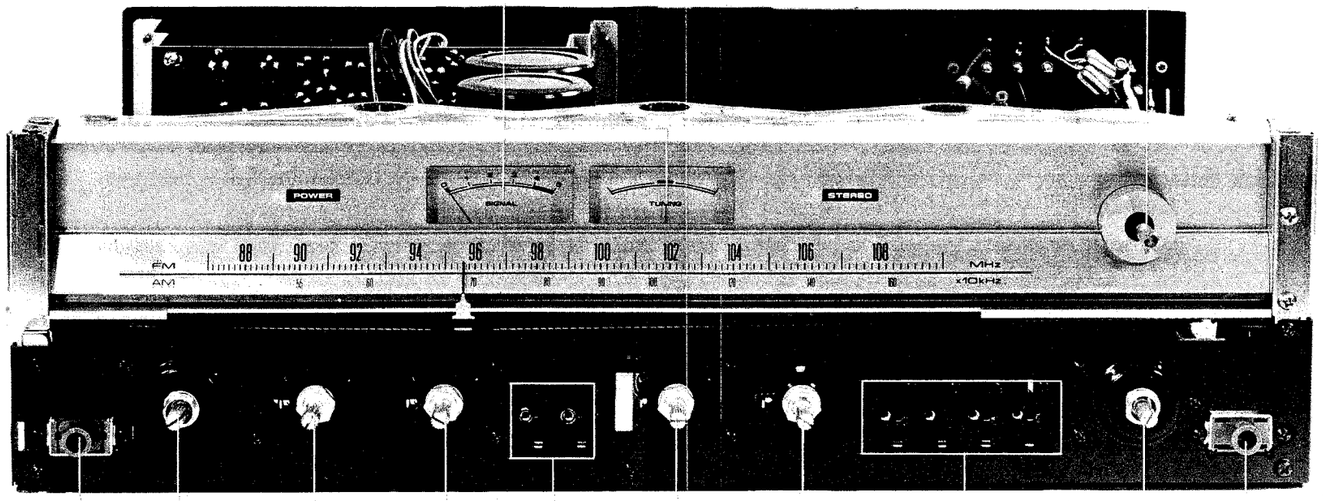
9.4 BOTTOM VIEW



9.5 FRONT VIEW

Meter
AAW-040

Tuning shaft assembly
AXA-124



Phone jack (PHONES)
AKN-009

Phone jack (MIC)
AKN-011

Rotary switch (SPEAKER)
ASA-039

Rotary switch (FUNCTION)
ASD-049

Variable resistor (BASS)
ACV-159

Lever switch (LOUDNESS, MODE, TAPE MONITOR 1, 2)
ASK-090

Variable resistor (TREBLE)
ACV-160

Variable resistor (VOLUME)
ACV-179

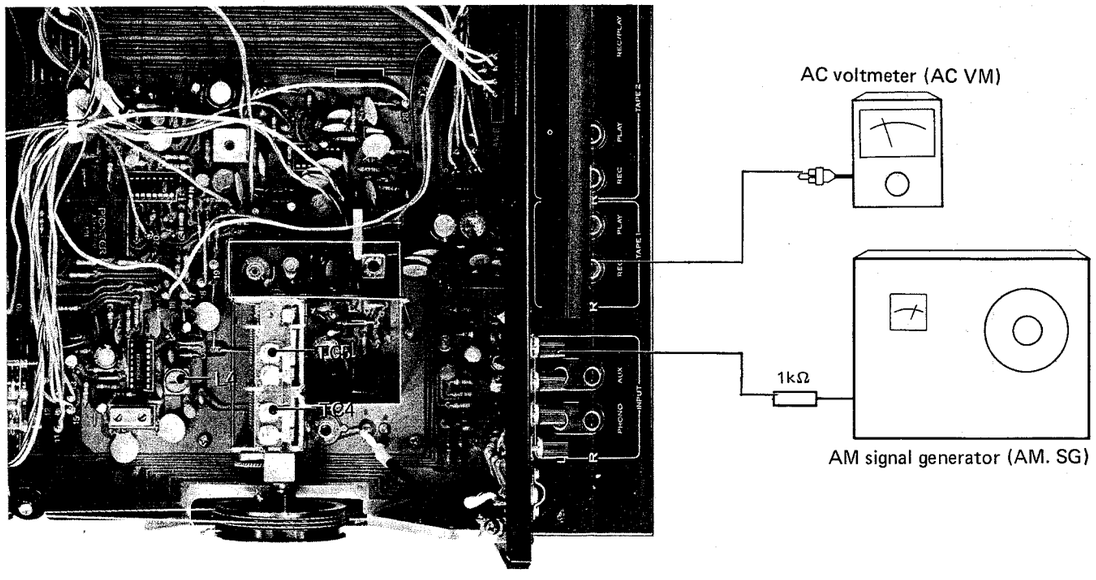
Lever switch
(HIGH FILTER, FM MUTING)
ASK-090

Variable resistor (BALANCE)
ACV-135

10. ADJUSTMENTS

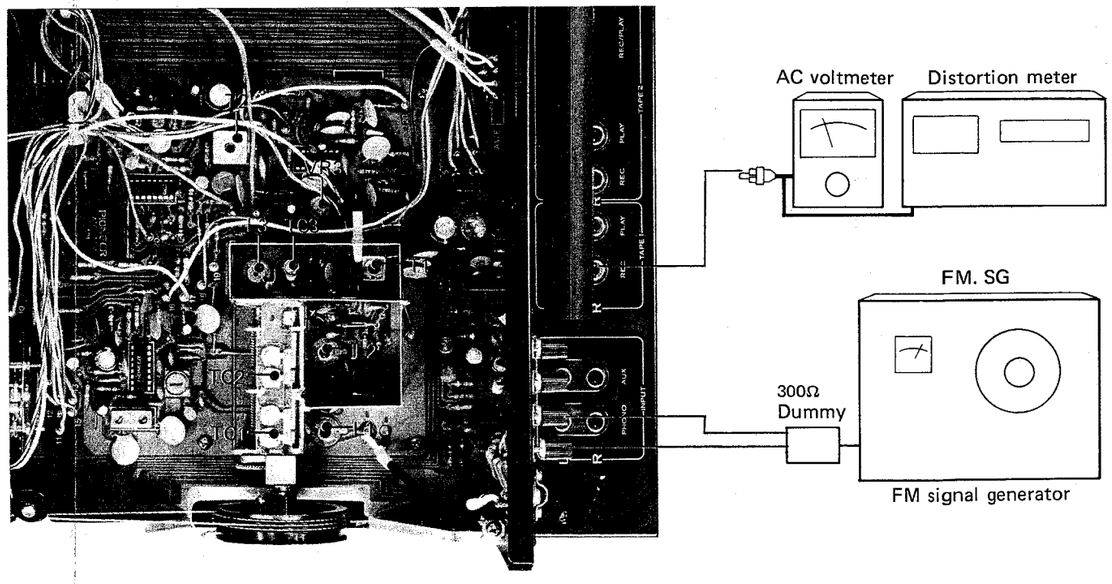
10.1 AM SECTION

1. Through a 1kilo ohm resistor, connect an AM signal generator to the AM antenna terminal. Set for 400Hz at 35dB and 30% modulation.
2. Connect AC voltmeter to TAPE REC jack (L or R).
3. Set FUNCTION switch to AM position.
4. Set AM SG and SX-650 dial indication to point A (600kHz).
5. Adjust L4 for maximum indication on AC VM.
6. Set AM SG and SX-650 dial indication to point C (1,400kHz).
7. Adjust TC4 for maximum indication on AC VM.
8. Again set AM SG and SX-650 dial indication to point A.
9. Adjust bar antenna core for maximum indication on AC VM.
10. Return AM SG and SX-650 dial indication to point C.
11. Adjust TC5 for maximum indication on AC VM.
12. Repeat steps 4-11 to eliminate variations in AM VM indications at points A and C.



10.2 FM SECTION

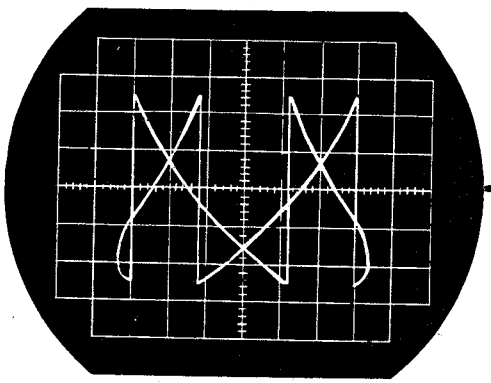
1. Through 300 ohm dummy antenna, connect FM signal generator to 300 ohm FM antenna terminals and set for 400Hz at 100dB and 100% modulation.
2. Connect AC voltmeter and distortion meter to TAPE REC jack (L or R).
3. Set FUNCTION switch to FM and MUTING switch to OFF.
4. Set FM SG and SX-650 dial indication to point A (90MHz).
5. Adjust L3 for maximum indication on AC VM.
6. Adjust T2 lower core for center of scale indication on tuning meter.
7. Set FM SG for 9dB output and adjust L1 and L2 for maximum indication on AC VM.
8. Set FM SG and SX-650 dial indication to point C (106MHz).
9. Adjust TC3, then TC1 and TC2 for maximum indication on AC VM.
10. Again set FM SG and SX-650 dial indication to point A.
11. Adjust L3, then L1 and L2 for maximum indication on AC VM.
12. Repeat steps 8-11 to eliminate variations in sensitivity at point A and C.
13. Adjust T1 for maximum sensitivity.
14. Detune to noise only and adjust T2 lower core for center of scale indication on tuning meter.
15. Set SX-650 dial indication to point B (98MHz) and adjust FM SG for center to scale indication on tuning meter.
16. Set FM SG output to 60dB and adjust T2 upper core for minimum distortion.
17. Repeat steps 14-16 to eliminate variations in minimum distortion position.
18. Set FM SG for 100dB output and adjust VR3 so that the signal meter indicates 4.6 on the scale.



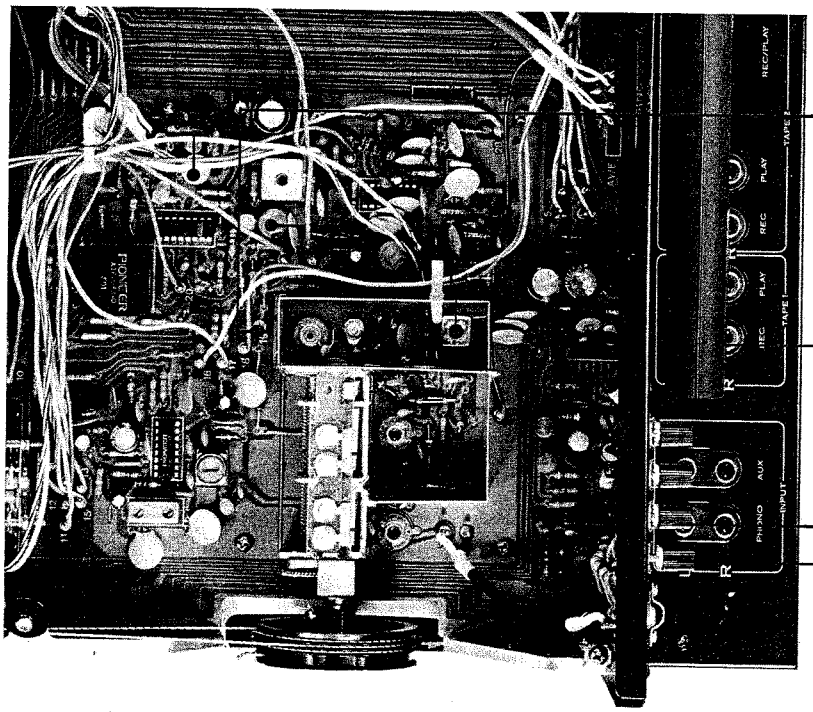
10.3 MPX SECTION

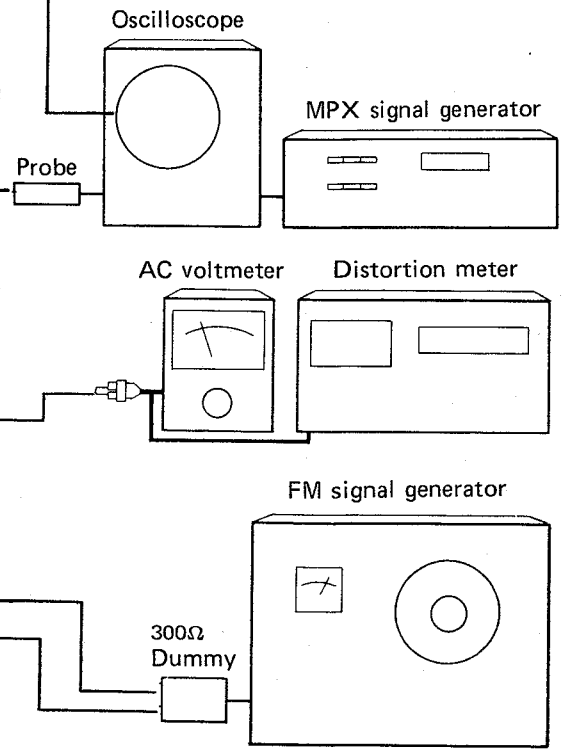
1. Through a 300 ohm dummy antenna, connect FM signal generator to 300 ohm FM antenna terminals.
2. Connect multiplex signal generator to external modulation terminals of FM SG.
3. Connect oscilloscope horizontal input to MPX SG pilot output and vertical input via probe to TP (No. 19) on the circuit board.
4. Set SX-650 dial indication to 98MHz and adjust FM SG for center scale indication on Tuning meter.
5. With FM SG unmodulated, adjust VR5 so that lissajous pattern on oscilloscope becomes stationary.
6. With MPX SG modulation 1kHz, L, R 67.5kHz deviation and Pilot 7.5kHz deviation, adjust T4 for minimum distortion.
7. Adjust VR4 for minimum signal leakage for R channel to L channel, and from L channel to R channel.

Lissajous



NOTE:
Signal at terminal No. 19 is 76kHz sawtooth wave and MPX SG pilot out is a 19kHz sinewave. These form Lissajous figure.



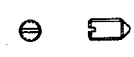
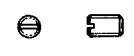


11. EXPLODED VIEWS

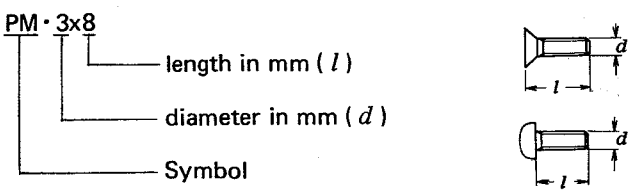
NOMENCLATURE OF SCREWS, WASHERS AND NUTS

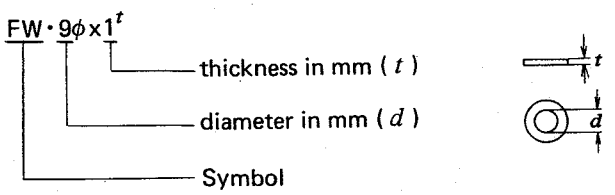
The following symbols stand for screws, washers and nuts as shown in exploded view.

Symbol	Description	Shape
RT	Brazier head tapping screw	
PT	Pan head tapping screw	
BT	Binding head tapping screw	
CT	Countersunk head tapping screw	
TT	Truss head tapping screw	
OCT	Oval countersunk head tapping screw	
PM	Pan head machine screw	
CM	Countersunk head machine screw	
OCM	Oval countersunk head machine screw	
TM	Truss head machine screw	
BM	Binding head machine screw	
PSA	Pan head screw with spring lock washer	
PSB	Pan head screw with spring lock washer and flat washer	
PSF	Pan head screw with flat washer	

Symbol	Description	Shape
EW	E type washer	
FW	Flat washer	
SW	Spring lock washer	
N	Nut	
WN	Washer faced nut	
ITW	Internal toothed lock washer	
OTW	Outernal toothed lock washer	
SC	Slotted set screw (Cone point)	
SF	Slotted set screw (Flat point)	
HS	Hexagon socket headless set screw	
OCW	Oval countersunk head wood screw	
CW	Countersunk head wood screw	
RW	Round head wood screw	

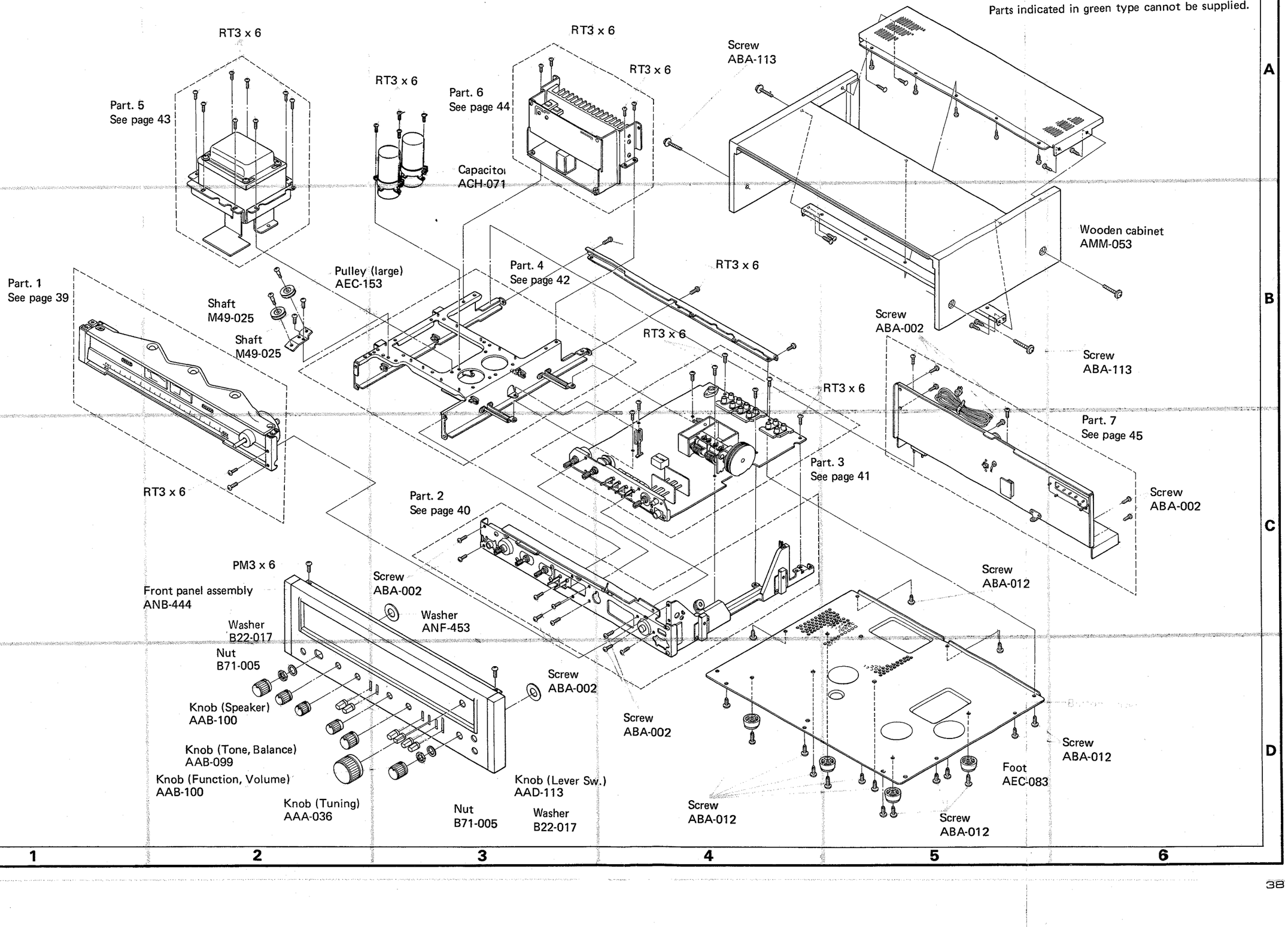
EXAMPLE





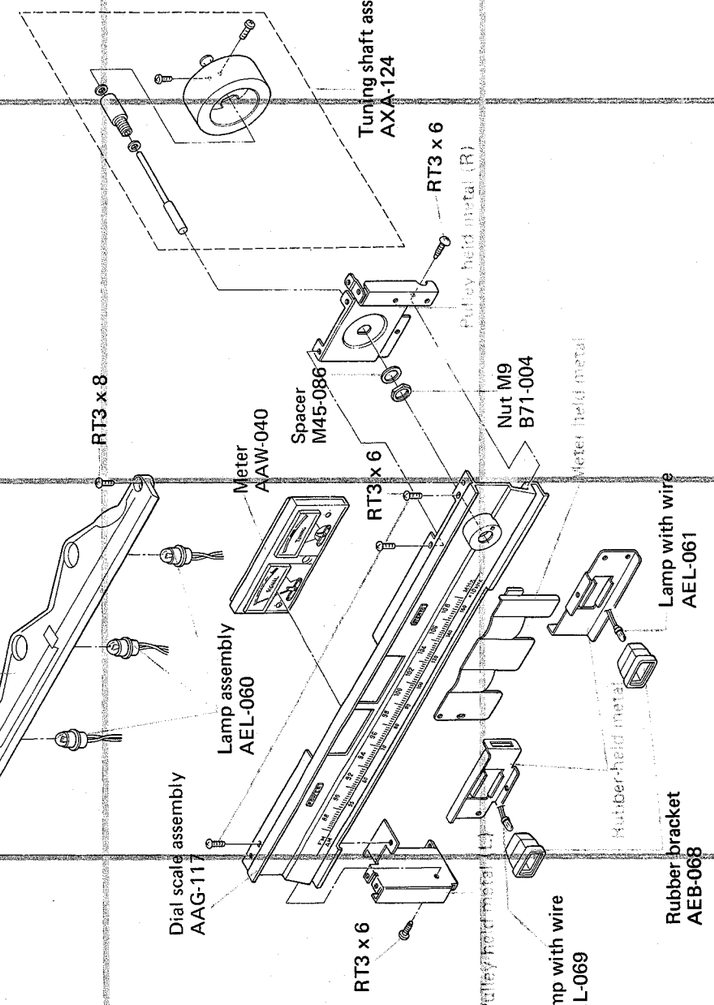
11.1 EXTERIOR

NOTE:
Parts indicated in green type cannot be supplied.



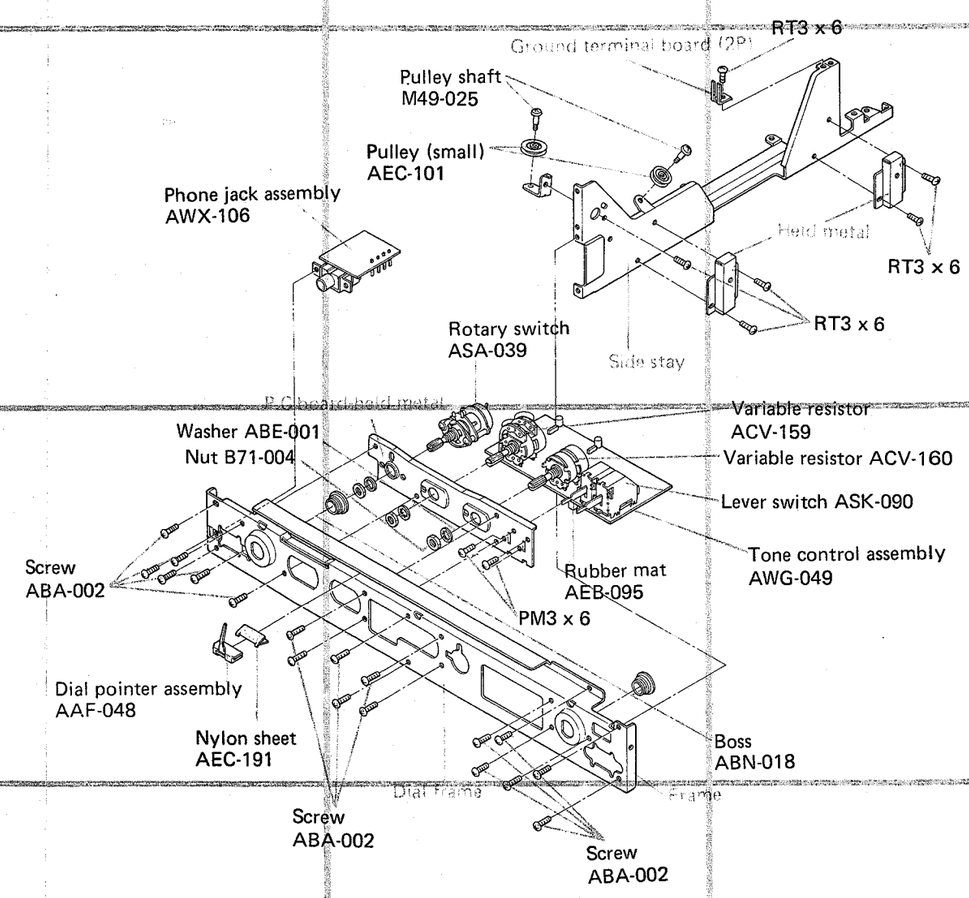
11.2 PART 1 DIAL SCALE

NOTE:
Parts indicated in green type cannot be supplied.



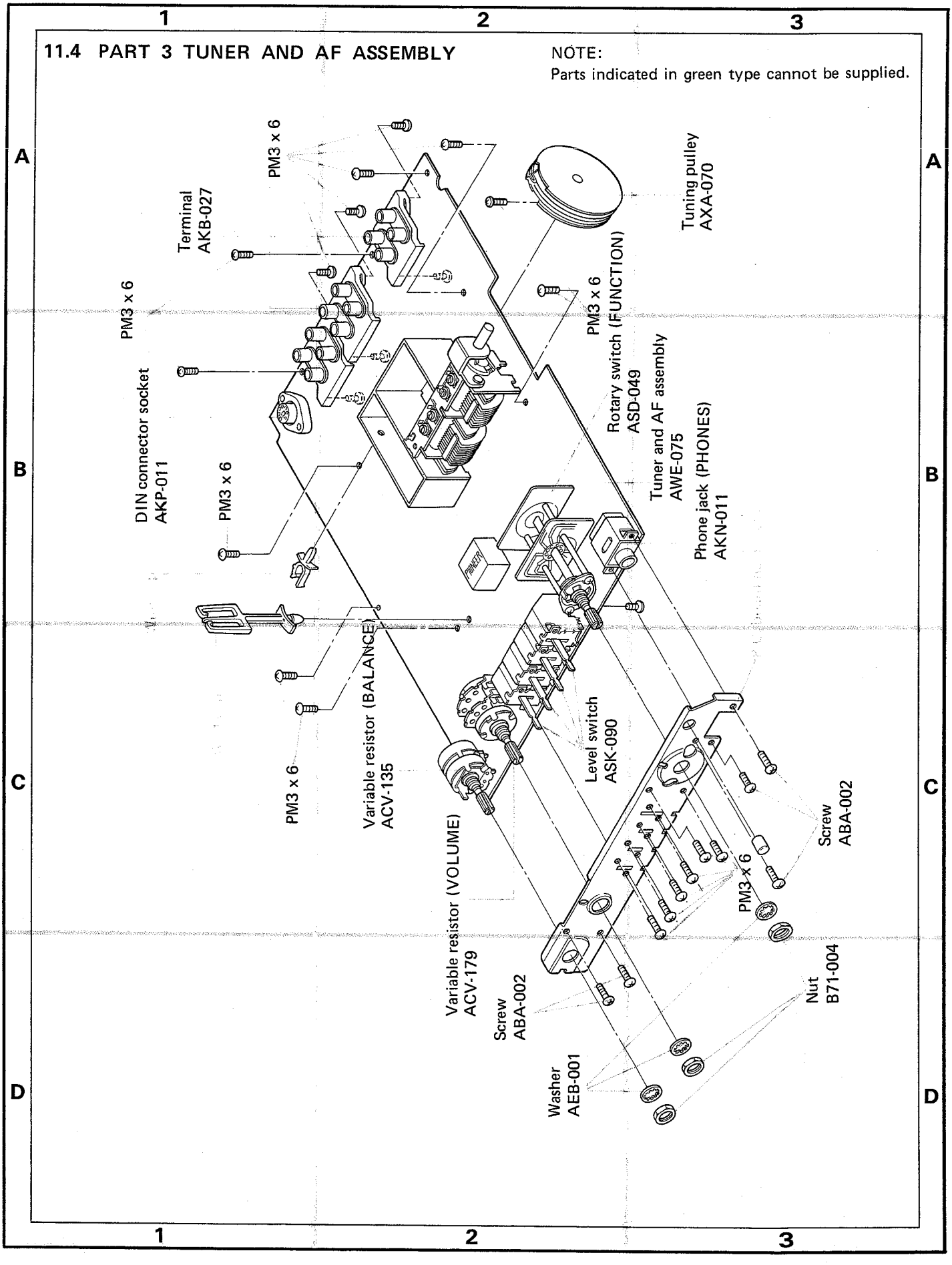
11.3 PART 2 DIAL FRAME

NOTE:
Parts indicated in green type cannot be supplied.



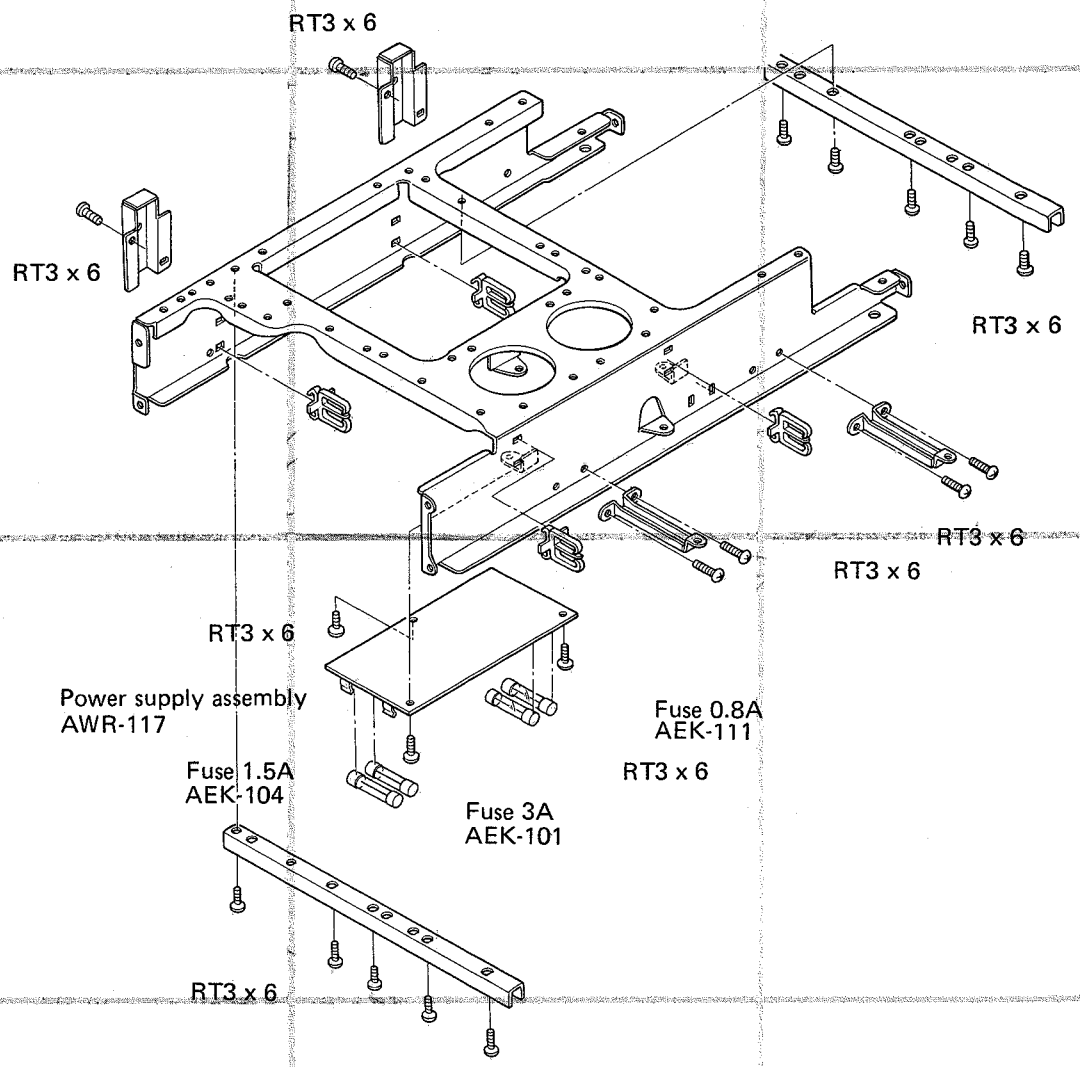
11.4 PART 3 TUNER AND AF ASSEMBLY

NOTE:
Parts indicated in green type cannot be supplied.



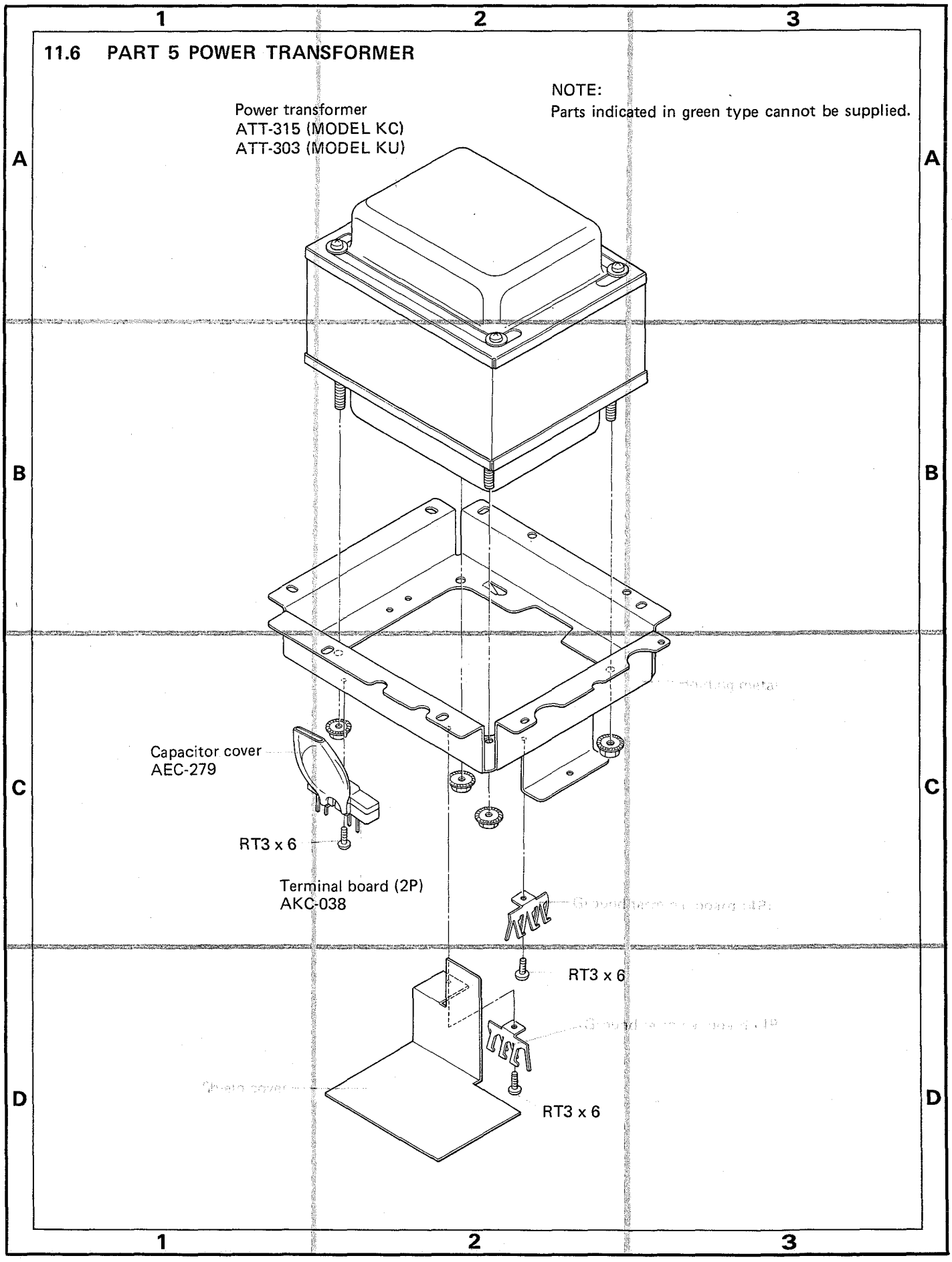
11.5 PART 4 POWER SUPPLY

NOTE:
Parts indicated in green type cannot be supplied.



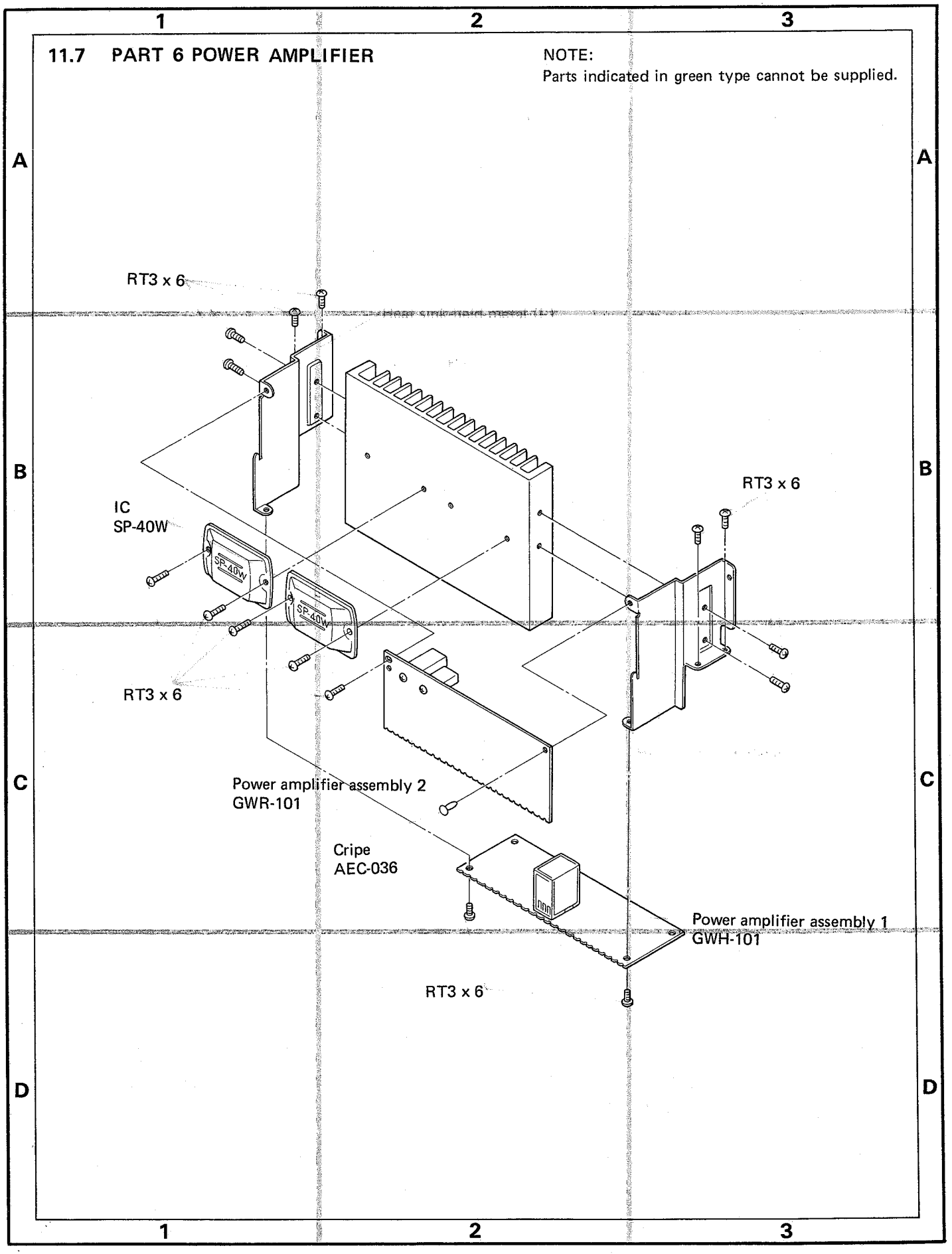
11.6 PART 5 POWER TRANSFORMER

NOTE:
Parts indicated in green type cannot be supplied.



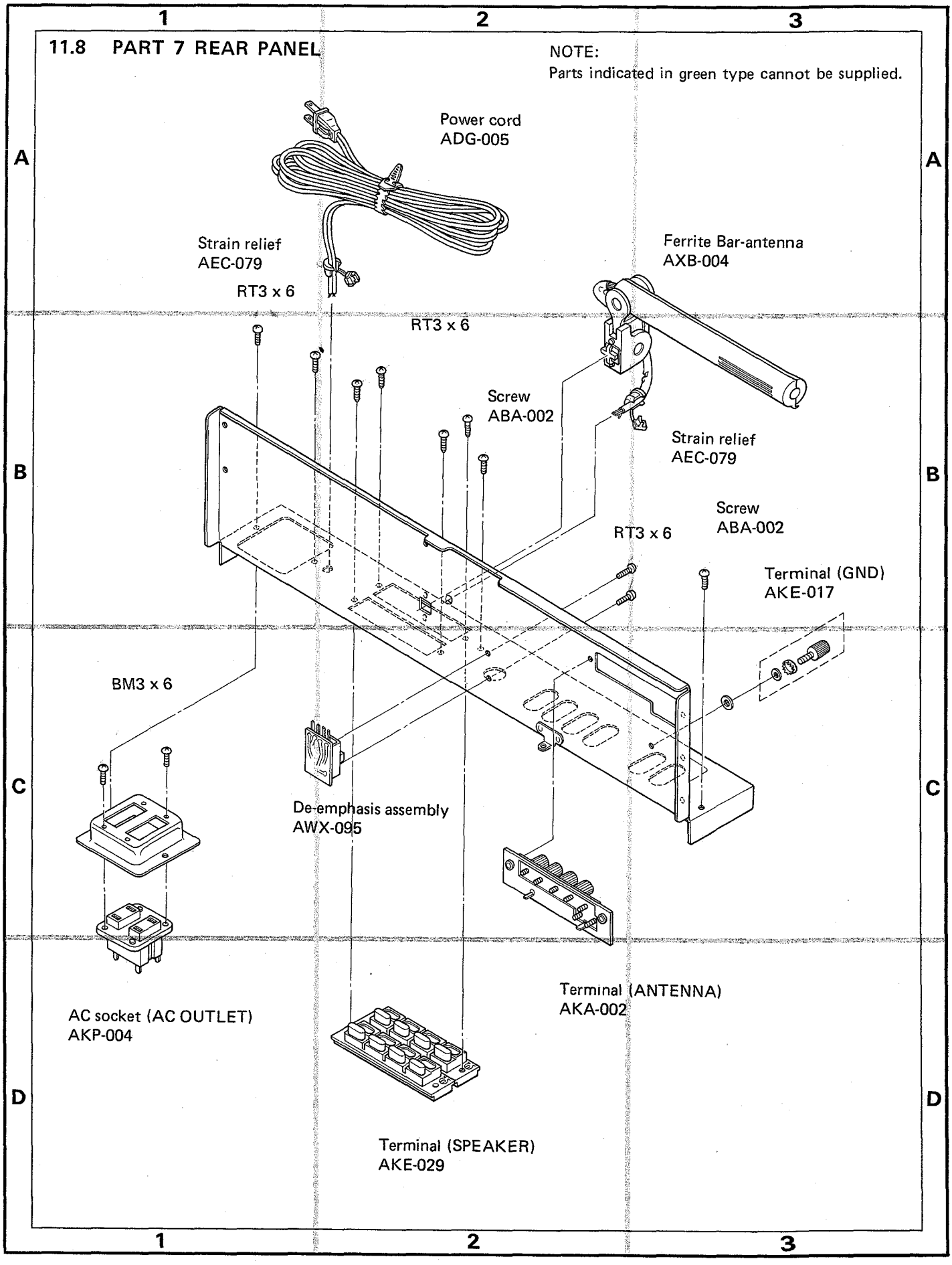
11.7 PART 6 POWER AMPLIFIER

NOTE:
Parts indicated in green type cannot be supplied.



11.8 PART 7 REAR PANEL

NOTE:
Parts indicated in green type cannot be supplied.



12. SCHEMATIC DIAGRAMS, P.C. BOARD PATTERNS AND PARTS LISTS

12.1 MISCELLANEOUS PARTS LIST

NOTE:
- *Capacitors: in μF unless otherwise noted P:pF*
- *Resistors: in Ω, ¼W unless otherwise noted k:kΩ, M:MΩ*

COILS AND TRANSFORMERS

Symbol	Description	Part No.
T1	Power transformer	ATT-315 (KC) ATT-303 (KU)
T2	Ferrite balun	T22-025
L1	Ferrite bar-antenna	AXB-004
L2	RF choke coil	T24-030

LAMPS

Symbol	Description	Part No.
PL1	Lamp assembly 8V 300mA	AEL-060
PL2	Lamp assembly 8V 300mA	AEL-060
PL3	Lamp assembly 8V 300mA	AEL-060
PL4	Lamp with leads 8V 50mA	AEL-069
PL5	Lamp with leads 8V 50mA	AEL-061

FUSES

Symbol	Description	Part No.
FU1	Fuse 1.5A	AEK-104
FU2	Fuse 0.8A	AEK-111
FU3	Fuse 0.8A	AEK-111
FU4	Fuse 3A	AEK-101

SEMICONDUCTORS

Symbol	Description	Part No.
Q1	Transistor	SP-40W
Q2	Transistor	SP-40W

CAPACITORS

Symbol	Description	Part No.
C1	Electrolytic 8000 50V	ACH-071
C2	Electrolytic 8000 50V	ACH-071
C3	Ceramic 0.01	ACG-003
C4	Ceramic 0.01	ACG-003 (KC) ACG-001 (KU)

RESISTOR

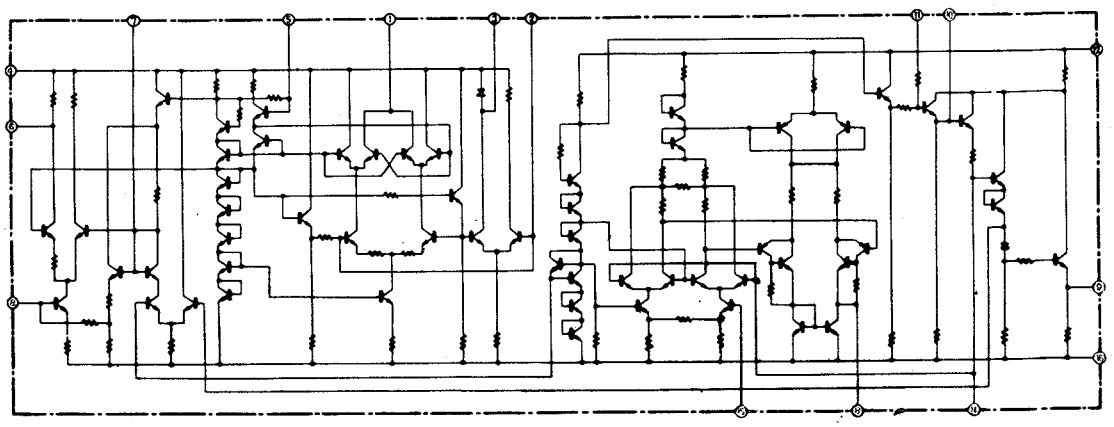
Symbol	Description	Part No.
R1	Carbon film 2.2M ½W	RD½PS 225J

SWITCH

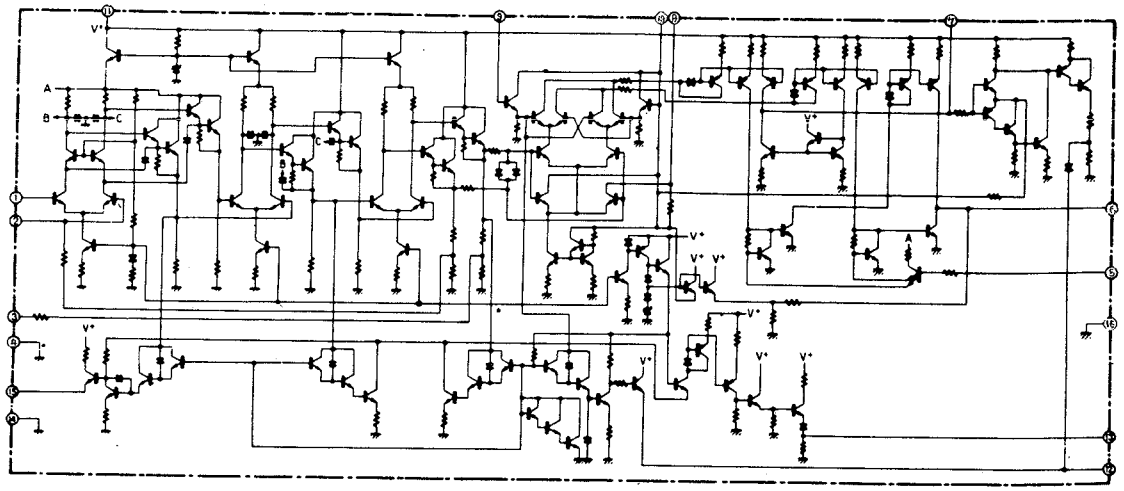
Symbol	Description	Part No.
S1	Selector switch (POWER)	ASA-039

Circuit Diagrams of ICs

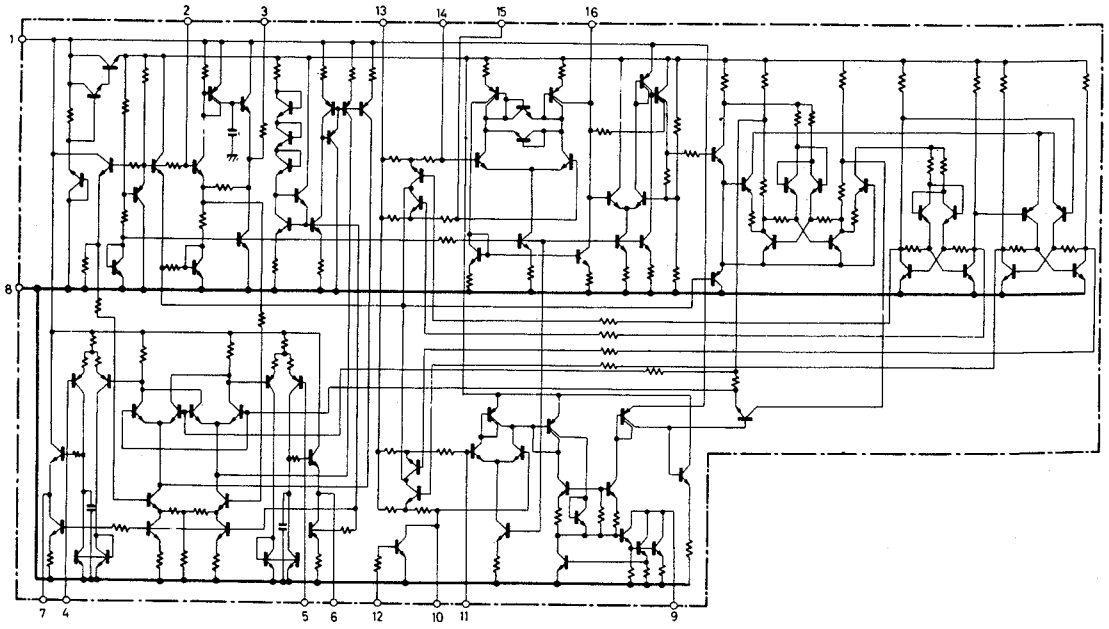
HA1138 (AM IC)



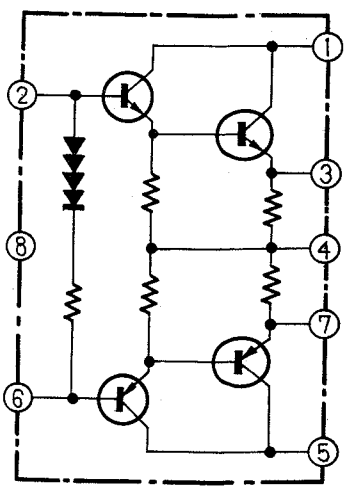
HA1137 (FM IF IC)



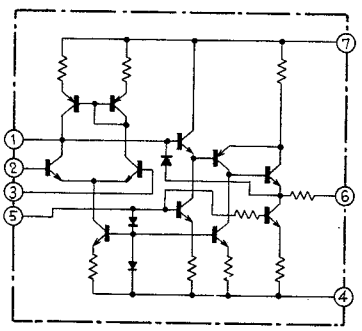
HA1196



SP-40W

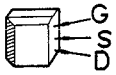


TA7136P1

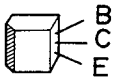


External Appearance of Transistors and ICs

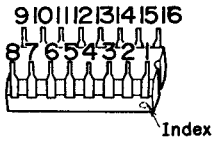
2SK55



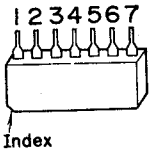
2SC535
2SC461
2SC1344



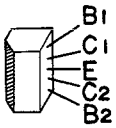
HA1137
HA1138
HA1196



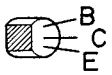
TA7136P



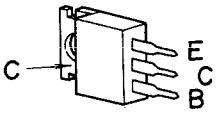
2SA798



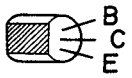
2SC1438
2SC1647
2SA823
2SC1649
2SC945A



2SD313
2SB507

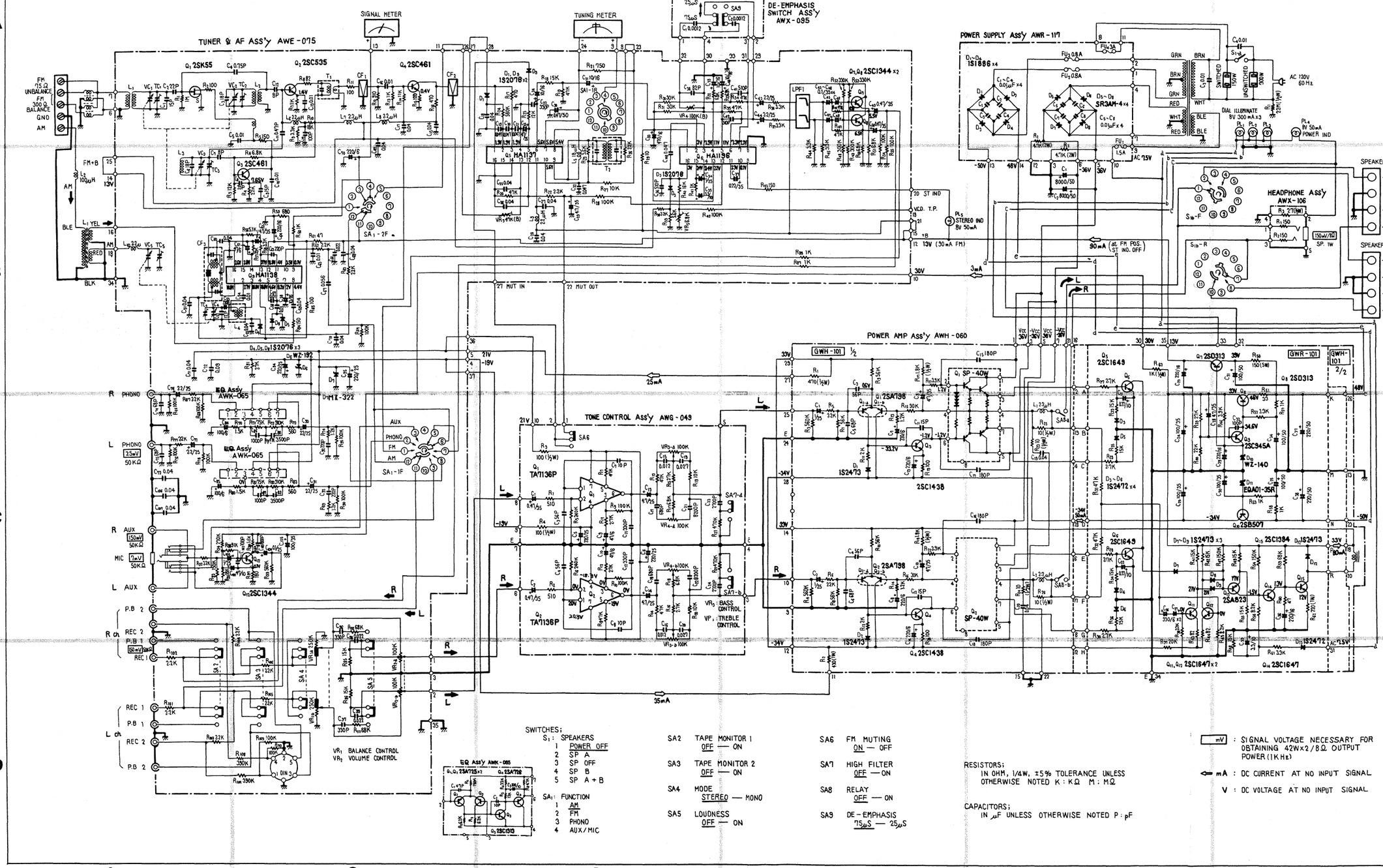


2SC1384



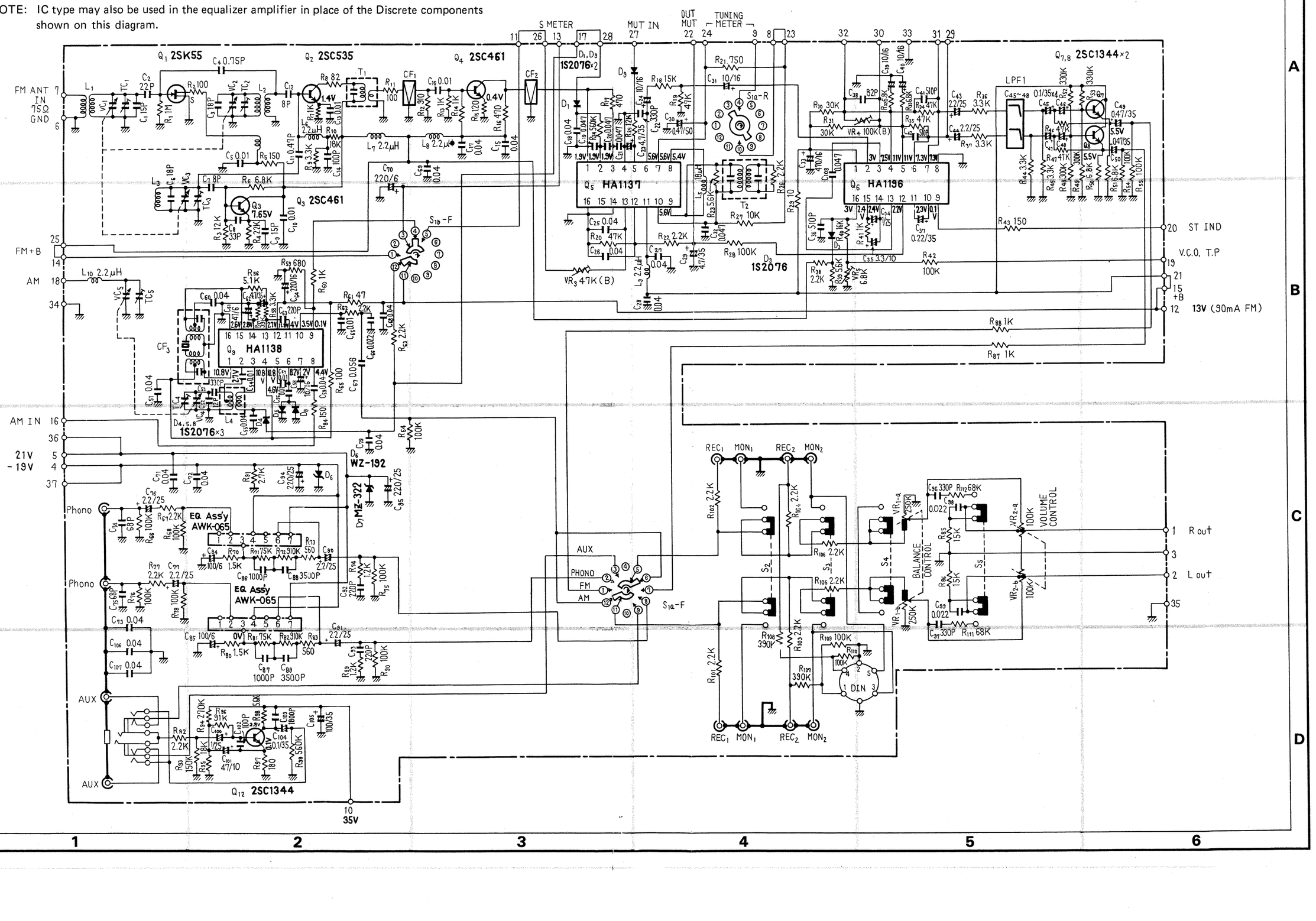
12.2 SCHEMATIC DIAGRAM

NOTE: The IC type of phono equalizer is identified by TUNER and AF Assembly AWE-075 while the discrete component type has the number AWE-075-A.



12.3 TUNER AND AF ASSEMBLY (AWE-075-A)

NOTE: IC type may also be used in the equalizer amplifier in place of the Discrete components shown on this diagram.



AWG-049, No. 10
AWG-049, No. 9
37 36
25 26 22 17 11 14
AWG-049, No. 1
AWG-049, No. 2
35 3 2 1
AWG-049, No. 7
AWG-049, No. 8
AWG-049, No. 6
33
32 → AWX-095, No. 1
31 → AWX-095, No. 3
29 → AWX-095, No. 2
30 → AWX-095, No. 4
GWH-101, No. 11 ← 4
GWH-101, No. 27 ← 5
20
10 → GWR-101, No. 30
STEREO IND
12 → GWR-101, No. 35
FM 75Ω UNBALANCE
RM 300Ω BALANCE
GND
AM
YEL
RED
BLK
16 18 24 21
13 23
TUNING METER
SIGNAL METER

Parts List of Tuner and AF Assembly (AWE-075-A)

SEMICONDUCTORS

Symbol	Description	Part No.
Q1	Transistor	2SK55-D
Q2	Transistor	2SC535-A
Q3	Transistor	2SC461-B
Q4	Transistor	2SC461-B
Q5	IC	HA1137
Q6	IC	HA1196
Q7	Transistor	2SC1344-D
Q8	Transistor	2SC1344-D
Q9	IC	HA1138
Q12	Transistor	2SC1344-D
D1	Diode	1S2076
D3	Diode	1S2076
D4	Diode	1S2076
D5	Diode	1S2076
D6	Zener diode	WZ-192
D7	Zener diode	MZ322-A
D8	Diode	1S2076
D9	Diode	1S2076

TRANSFORMERS AND COILS

Symbol	Description	Part No.
L1	FM antenna coil	ATC-023
L2	FM RF coil	ATC-024
L3	FM oscilator coil	ATC-025
L4	AM oscilator coil	ATB-013
L5	Micro inductor	ATH-007
L6	RF choke coil	T24-028
L7	RF choke coil	T24-028
L8	RF choke coil	T24-028
L9	RF choke coil	T24-028
L10	RF choke coil	T24-028
T1	FM matching transformer	ATE-008
T2	FM IF transformer	T73-035
CF1	FM ceramic filter	ATF-013
CF2	FM ceramic filter	ATF-013
CF3	AM ceramic filter	ATF-027
LPF1	Low pass filter	ATF-033

SWITCHES

Symbol	Description	Part No.
S1	Rotary switch (FUNCTION)	ASD-049
S2	Lever switch (LOUDNESS)	ASK-090
S3	Lever switch (MODE)	ASK-090
S4	Lever switch (TAPE MONITOR)	ASK-090
S5	Lever switch (TAPE MONITOR)	ASK-090

OTHERS

Symbol	Description	Part No.
J1	Phone jack (PHONES)	AKN-011
	Nut (M9)	B71-004
	Inside-toothed washer	ABE-001
	Terminal	AKB-027
	DIN connector socket	AKP-011

RESISTORS

Symbol	Description	Part No.
VR1	Variable (BALANCE) 250k	ACV-135
VR2	Variable (VOLUME) 100k	ACV-179
VR3	Semi-fixed	C92-048
VR4	Semi-fixed	C92-047
VR5	Semi-fixed	ACP-023
R1	Carbon film 1M	RD¼PS 105J
R2	Carbon film 100	RD¼VS 101J
R3	Carbon film 12k	RD¼VS 123J
R4	Carbon film 2.2k	RD¼VS 222J
R5	Carbon film 150	RD¼PS 151J
R6	Carbon film 6.8k	RD¼VS 682J
R7	Carbon film 1k	RD¼VS 102J
R8	Carbon film 82	RD¼VS 820J
R9	Carbon film 3.3k	RD¼VS 332J
R10	Carbon film 18k	RD¼VS 183J
R11	Carbon film 100	RD¼PS 101J
R12	Carbon film 910	RD½PM 911J
R13	Carbon film 1k	RD¼PS 102J
R14	Carbon film 11k	RD¼PS 113J
R15	Carbon film 120	RD¼PS 121J
R16	Carbon film 470	RD¼PS 471J
R17	Carbon film 470	RD¼PS 471J
R18	Carbon film 15k	RD¼PS 153J
R19	Carbon film 47k	RD¼PS 473J
R20	Carbon film 47k	RD¼PS 473J
R21	Carbon film 750	RD¼PS 751J
R22	Carbon film 2.2k	RD¼PS 222J
R23	Carbon film 5.6k	RD¼PS 562J
R24	Carbon film 560k	RD¼PS 564J
R25	Carbon film 12k	RD¼PS 123J

Symbol	Description	Part No.
R26	Carbon film 2.2k	RD¼PS 222J
R27	Carbon film 10k	RD¼PS 103J
R28	Carbon film 100k	RD¼PS 104J
R29	Carbon film 10	RD¼PS 100J
R30	Carbon film 30k	RD¼PS 303J
R31	Carbon film 30k	RD¼PS 303J
R32	Carbon film 6.8k	RD¼PS 682J
R33	Carbon film 6.8k	RD¼PS 682J
R34	Carbon film 47k	RD¼PS 473J
R35	Carbon film 47k	RD¼PS 473J
R36	Carbon film 3.3k	RD¼PS 332J
R37	Carbon film 3.3k	RD¼PS 332J
R38	Carbon film 2.2k	RD¼PS 222J
R39	Carbon film 5.6k	RD¼PS 562J
R40	Metal film 16k	RN¼PT 1602F
R41	Carbon film 1k	RD¼PS 102J
R42	Carbon film 100k	RD¼PS 104J
R43	Carbon film 150	RD¼PS 151J
R44	Carbon film 3.3k	RD¼PS 332J
R45	Carbon film 3.3k	RD¼PS 332J
R46	Carbon film 47k	RD¼PS 473J
R47	Carbon film 47k	RD¼PS 473J
R48	Carbon film 300k	RD¼PS 304J
R49	Carbon film 300k	RD¼PS 304J
R50	Carbon film 6.8k	RD¼PS 682J
R51	Carbon film 6.8k	RD¼PS 682J
R52	Carbon film 330k	RD¼PS 334J
R53	Carbon film 330k	RD¼PS 334J
R54	Carbon film 100k	RD¼PS 104J
R55	Carbon film 100k	RD¼PS 104J
R56	Carbon film 5.1k	RD¼PS 512J
R57	Carbon film 39k	RD¼PS 393J
R58	Carbon film 3.3k	RD¼PS 332J
R59	Carbon film 680	RD¼PS 681J
R60	Carbon film 1k	RD¼PS 102J
R61	Carbon film 47	RD¼PS 470J
R62	Carbon film 2.2k	RD¼PS 222J
R63	Carbon film 2.2k	RD¼PS 222J
R64	Carbon film 100k	RD¼PS 104J
R65	Carbon film 100	RD¼PS 101J
R66	Carbon film 100k	RD¼PS 104J
R67	Carbon film 2.2k	RD¼PS 222J
R68	Carbon film 100k	RD¼PS 104J
R71	Carbon film 75k	RD¼PS 753J
R72	Carbon film 910k	RD¼PS 914J
R73	Carbon film 560	RD¼PS 561J
R74	Carbon film 1.2k	RD¼PS 122J
R75	Carbon film 100k	RD¼PS 104J
R76	Carbon film 100k	RD¼PS 104J

Symbol	Description	Part No.
R77	Carbon film 2.2k	RD¼PS 222J
R78	Carbon film 100k	RD¼PS 104J
R80	Carbon film 1.5k	RD¼PS 152J
R81	Carbon film 75k	RD¼PS 753J
R82	Carbon film 910k	RD¼PS 914J
R83	Carbon film 560	RD¼PS 561J
R84	Carbon film 150	RD¼PS 151J
R85	Carbon film 15k	RD¼PS 153J
R86	Carbon film 15k	RD¼PS 153J
R87	Carbon film 1k	RD¼PS 102J
R88	Carbon film 1k	RD¼PS 102J
R89	Carbon film 1.2k	RD¼PS 122J
R90	Carbon film 100k	RD¼PS 104J
R91	Carbon film 2.7k	RD¼PS 272J
R92	Carbon film 2.2k	RD¼PS 222J
R93	Carbon film 150k	RD¼PS 154J
R94	Carbon film 270k	RD¼PS 274J
R95	Carbon film 18k	RD¼PS 183J
R96	Carbon film 91k	RD¼PS 913J
R97	Carbon film 180	RD¼PS 181J
R98	Carbon film 5.6k	RD¼PS 562J
R99	Carbon film 560k	RD¼PS 564J
R100	Carbon film 1k	RD¼PS 102J
R101	Carbon film 2.2k	RD¼PS 222J
R102	Carbon film 2.2k	RD¼PS 222J
R103	Carbon film 2.2k	RD¼PS 222J
R104	Carbon film 2.2k	RD¼PS 222J
R105	Carbon film 2.2k	RD¼PS 222J
R106	Carbon film 2.2k	RD¼PS 222J
R107	Carbon film 390k	RD¼PS 394J
R108	Carbon film 390k	RD¼PS 394J
R109	Carbon film 100k	RD¼PS 104J
R110	Carbon film 100k	RD¼PS 104J
R111	Carbon film 68k	RD¼PS 683J
R112	Carbon film 68k	RD¼PS 683J

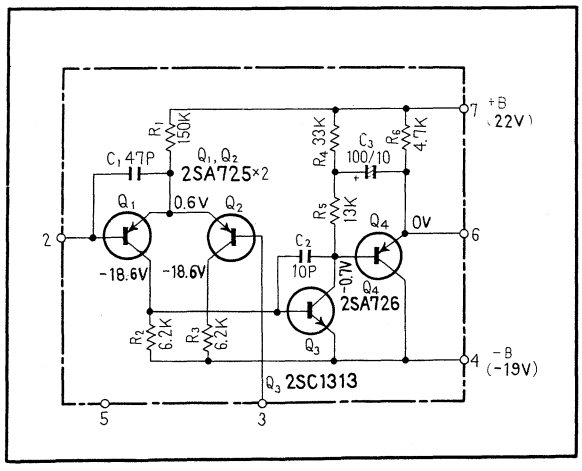
CAPACITORS

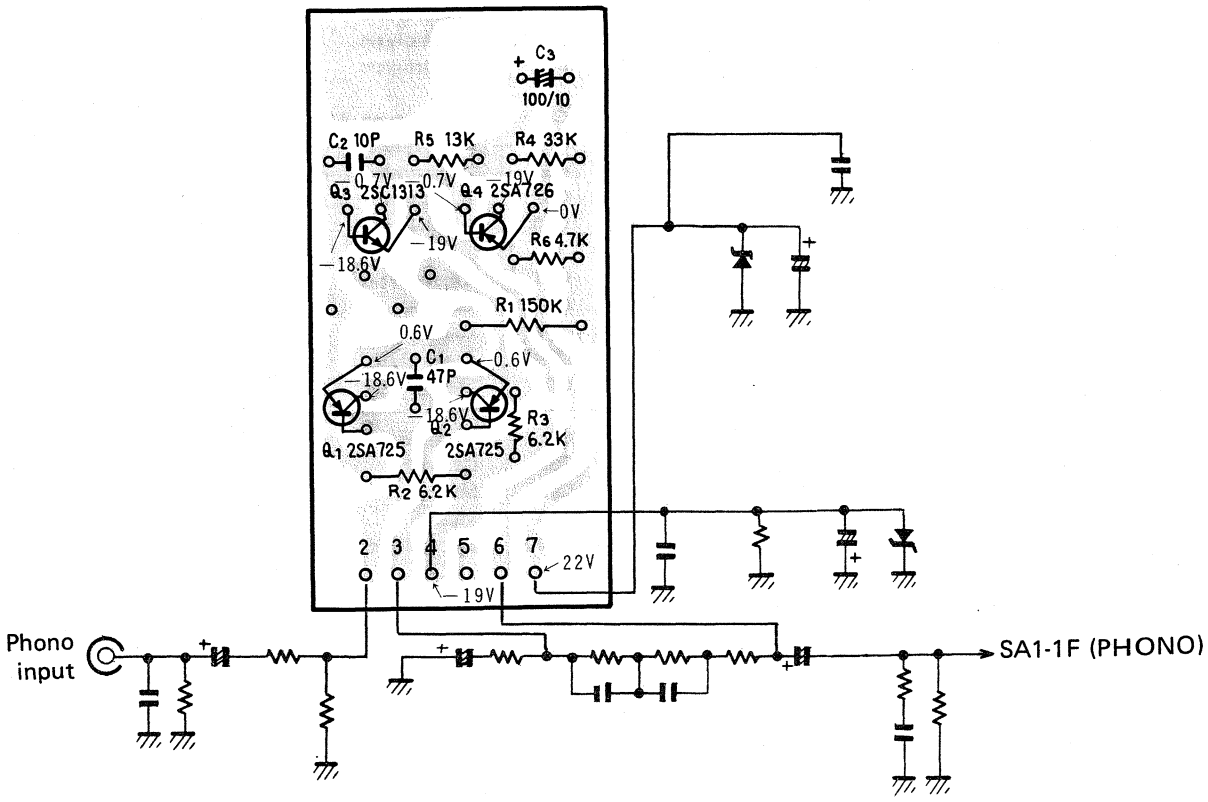
Symbol	Description	Part No.
	Variable capacitor	ACK-012
	Ceramic trimmer	ACM-006
C1	Ceramic 15p 50V	CCDTH 150K 50
C2	Ceramic 22p 50V	CCDSL 220K 50
C3	Ceramic 18p 50V	CCDTH 180K 50
C4	Ceramic 0.75p 500V	CGB R75K 500
C5	Ceramic 0.01 50V	CKDYF 103Z 50

Symbol	Description			Part No.
C6	Ceramic	18p	50V	CCDSH 180K 50
C7	Ceramic	8p	50V	CCDCH 080F 50
C8	Ceramic	33p	50V	CCDCH 330K 50
C9	Ceramic	15p	50V	CCDCH 150K 50
C10	Ceramic	0.01	50V	CKDYB 103K 50
C11	Ceramic	0.47p	500V	CGB R47K 500
C12	Ceramic	8p	50V	CCDSL 080F 50
C13	Ceramic	0.01	50V	CKDYF 103Z 50
C14	Ceramic	100p	50V	CCDSL 101K 50
C15	Ceramic	0.04	50V	CKDYF 403Z 50
C16	Ceramic	0.01	50V	CKDYF 103Z 50
C17	Ceramic	0.04	50V	CKDYF 403Z 50
C18	Ceramic	0.04	50V	CKDYF 403Z 50
C19	Ceramic	0.047	50V	CKDBC 473Z 50
C20	Ceramic	0.047	50V	CKDBC 473Z 50
C21	Ceramic	0.047	50V	CKDBC 473Z 50
C22	Ceramic	330p	50V	CKDYB 331K 50
C23	Electrolytic	4.7	35V	CEA 4R7P 35
C24	Electrolytic	10	16V	CSZA 100M 16
C25	Ceramic	0.04	50V	CKDYF 403Z 50
C26	Ceramic	0.04	50V	CKDYF 403Z 50
C27	Ceramic	0.04	50V	CKDYF 403Z 50
C28	Ceramic	0.04	50V	CKDYF 403Z 50
C29	Electrolytic	4.7	35V	CEA 4R7P 35
C30	Electrolytic	0.47	50V	CEA R47P 50
C31	Electrolytic	10	16V	CSZA 100M 16
C32	Ceramic	0.047	50V	CKDBC 473Z 50
C33	Electrolytic	470	16V	CEA 471P 16
C34	Electrolytic	1	25V	CSZA 010M 25
C35	Electrolytic	3.3	10V	CSZA 3R3M 10
C36	Polystyrene film	510p	50V	CQSH 511J 50
C37	Electrolytic	0.22	25V	CSZA R22M 25
C38	Ceramic	82p	50V	CCDSL 820K 50
C39	Electrolytic	10	16V	CEA 100P 16
C40	Electrolytic	10	16V	CEA 100P 16
C41	Polystyrene film	510p	50V	CQSA 511J 50
C42	Polystyrene film	510p	50V	CQSA 511J 50
C43	Electrolytic	2.2	25V	CSZA 2R2M 25
C44	Electrolytic	2.2	25V	CSZA 2R2M 25
C45	Electrolytic	0.1	25V	CSZA 0R1M 25
C46	Electrolytic	0.1	25V	CSZA 0R1M 25
C47	Electrolytic	0.1	25V	CSZA 0R1M 25
C48	Electrolytic	0.1	25V	CSZA 0R1M 25
C49	Electrolytic	0.47	25V	CSZA R47M 25
C50	Electrolytic	0.47	25V	CSZA R47M 25
C51	Ceramic	0.04	50V	CKDYF 403Z 50
C52	Ceramic	12p	50V	CCDXL 120K 50
C53	Polystyrene film	330p	50V	CQSA 331J 50
C54	Ceramic	0.01	50V	CKDYF 103Z 50
C55	Ceramic	0.04	50V	CKDYF 403Z 50

Symbol	Description			Part No.
C56	Ceramic	0.01	50V	CKDYF 103Z 50
C57	Ceramic	0.01	50V	CKDYF 103Z 50
C58	Electrolytic	10	16V	CEA 100P 16
C59	Ceramic	0.04	50V	CKDYF 403Z 50
C60	Ceramic	0.04	50V	CKDYF 403Z 50
C61	Electrolytic	47	6V	CEA 470P 6
C62	Electrolytic	4.7	35V	CEA 4R7P 35
C63	Ceramic	220p	50V	CCDSL 221K 50
C64	Electrolytic	220	16V	CEA 221P 16
C65	Ceramic	0.01	50V	CKDYF 103Z 50
C66	Ceramic	0.022	50V	CKDYF 223Z 50
C67	Mylar	0.056	50V	CQMA 563K 50
C68	Ceramic	0.04	50V	CKDYF 403Z 50
C69	Ceramic	0.04	50V	CKDYF 403Z 50
C70	Electrolytic	220	6V	CEA 221P 6
C71	Ceramic	0.04	50V	CKDYF 403Z 50
C72	Ceramic	0.04	50V	CKDYF 403Z 50
C73	Ceramic	0.04	50V	CKDYF 403Z 50
C74	Ceramic	68p	50V	CCDSL 680K 50
C75	Ceramic	68p	50V	CCDSL 680K 50
C76	Electrolytic	2.2	25V	CSZA 2R2M 25
C77	Electrolytic	2.2	25V	CSZA 2R2M 25
C84	Electrolytic	100	6V	CEA 101P 6
C85	Electrolytic	100	6V	CEA 101P 6
C86	Polystyrene film	1000p	50V	CQSA 102G 50
C87	Polystyrene film	1000p	50V	CQSA 102G 50
C88	Polystyrene film	3500p	50V	CQSA 352G 50
C89	Polystyrnee film	3500p	50V	CQSA 352G 50
C90	Electrolytic	2.2	25V	CSZA 2R2M 25
C91	Electrolytic	2.2	25V	CSZA 2R2M 25
C92	Ceramic	220p	50V	CCDSL 221K 50
C93	Ceramic	220p	50V	CCDSL 221K 50
C94	Electrolytic	220	25V	CEA 221P 25
C95	Electrolytic	220	25V	CEA 221P 25
C96	Ceramic	330p	50V	CKDYB 331K 50
C97	Ceramic	330p	50V	CKDYB 331K 50
C98	Mylar	0.022	50V	CQMA 223K 50
C99	Mylar	0.022	50V	CQMA 223K 50
C100	Electrolytic	1	25V	CSZA 010M 25
C101	Electrolytic	47	10V	CEA 470P 10
C102	Ceramic	100p	50V	CCDSL 101K 50
C103	Ceramic	1800p	50V	CKDYB 182K 50
C104	Electrolytic	0.1	35V	CSZA 0R1M 35
C105	Electrolytic	100	35V	CEA 101P 35
C106	Ceramic	0.04	50V	CKDYF 403Z 50
C107	Ceramic	0.04	50V	CKDYF 403Z 50
C108	Mylar	0.047	50V	CQMA 473K 50

12.4 EQUALIZER AMPLIFIER ASSEMBLY (AWK-065)





Parts List

SEMICONDUCTORS

Symbol	Descritpion	Part No.
Q1	Transistor	2SA725-G (2SA640-E)
Q2	Transistor	2SA725-G (2SA640-E)
Q3	Transistor	2SC1313-G
Q4	Transistor	2SA726-G (2SA640-E)

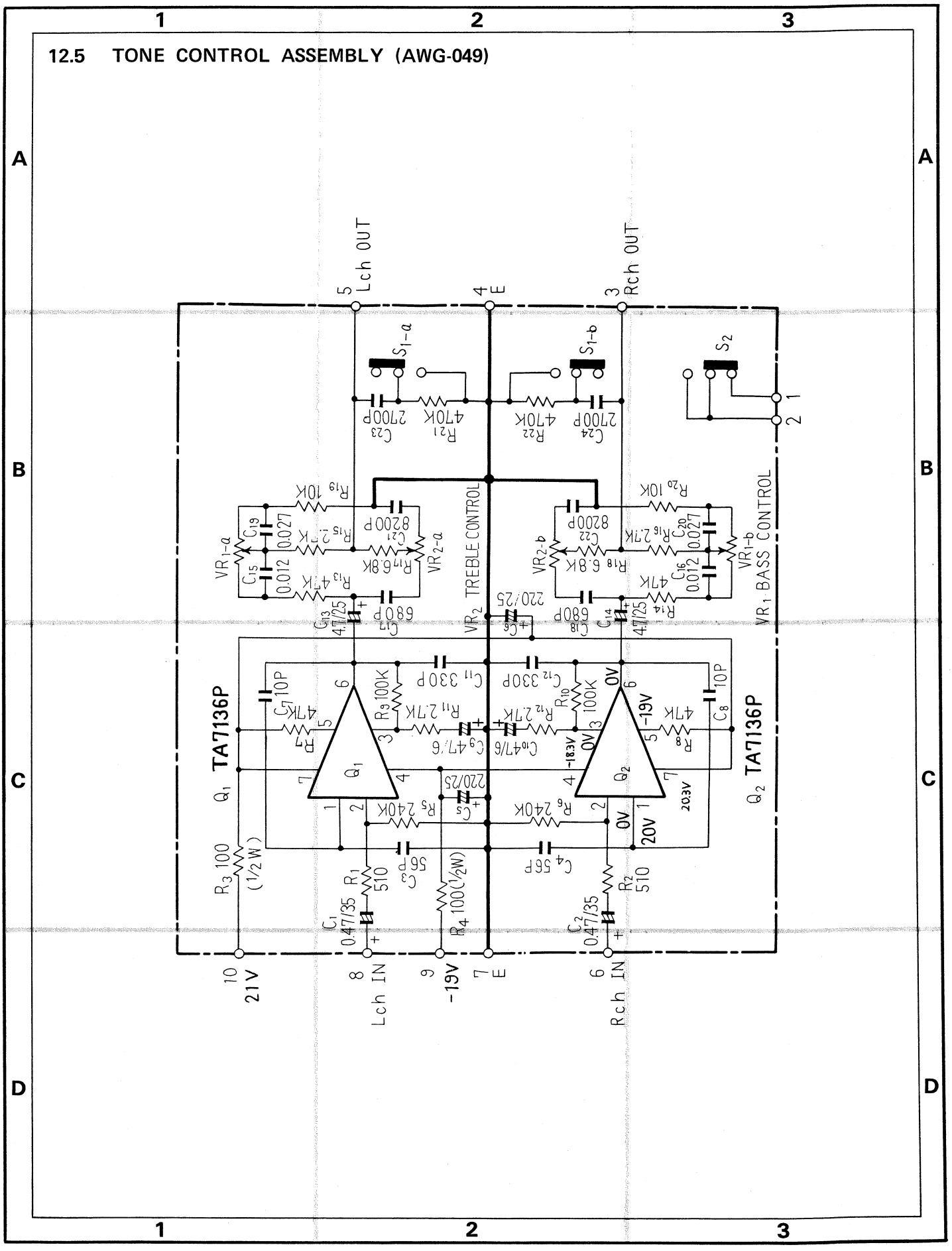
RESISTORS

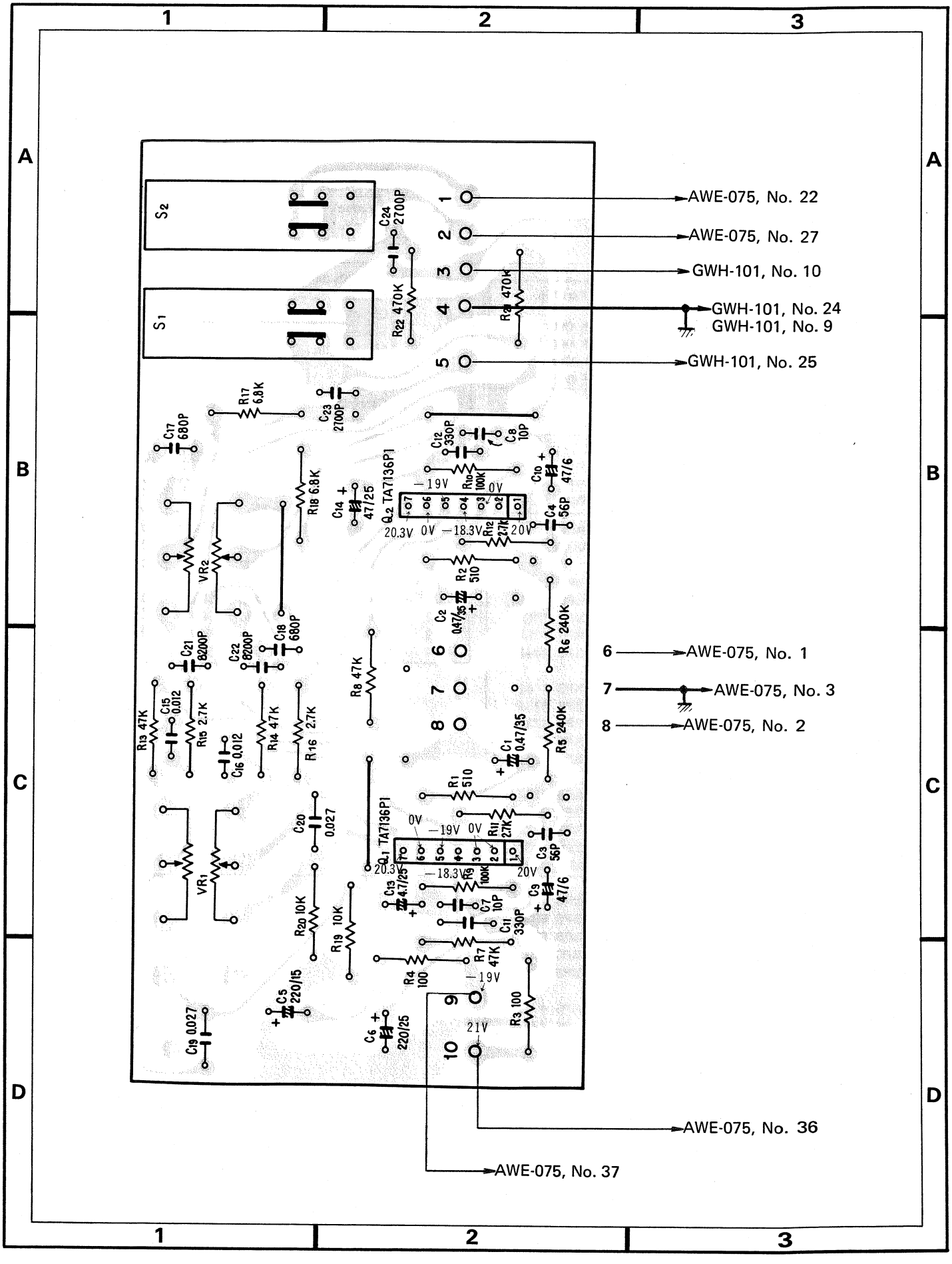
Symbol	Description	Part No.
R1	Carbon film 150k	RD¼VS 154J NL
R2	Carbon film 6.2k	RD¼VS 622J
R3	Carbon film 6.2k	RD¼VS 622J
R4	Carbon film 33k	RD¼VS 333J
R5	Carbon film 13k	RD¼VS 133J
R6	Carbon film 4.7k	RD¼VS 472J

CAPACITORS

Symbol	Description			Part No.
C1	Ceramic	47p	50V	CCDSL 470K 50
C2	Ceramic	10p	50V	CCDSL 100K 50
C3	Electrolytic	100	10V	CEA 101P 10

12.5 TONE CONTROL ASSEMBLY (AWG-049)




1
2
3
A
B
C
D
S2
S1
C24 2700P
R22 470K
R21 470K
1
2
3
4
5
AWE-075, No. 22
AWE-075, No. 27
GWH-101, No. 10
GWH-101, No. 24
GWH-101, No. 9
GWH-101, No. 25
R17 6.8K
C23 2700P
C17 680P
C12 330P
C8 10P
C10 47/6
R10 100K
Q2 TA7136P1
C14 47/25
R18 6.8K
VR2
C4 56P
R12 2.7K
R2 510
C2 0.47/35
R6 240K
C21 8200P
C22 8200P
C18 680P
R8 47K
6
7
8
AWE-075, No. 1
AWE-075, No. 3
AWE-075, No. 2
R13 47K
C15 0.012
R15 2.7K
C16 0.012
R14 47K
R16 2.7K
C1 0.47/35
R5 240K
R1 510
C20 0.027
VR1
Q1 TA7136P1
R11 2.7K
C3 56P
R9 100K
C13 47/25
C9 47/6
C7 10P
C11 330P
R20 10K
R19 10K
R7 47K
R4 100
9
10
R3 100
C5 220/15
C6 220/25
C19 0.027
AWE-075, No. 36
AWE-075, No. 37

Parts List of Tone Control Assembly (AWG-049)

SEMICONDUCTORS

Symbol	Description	Part No.
Q1	IC	TA7136P
Q2	IC	TA7136P

OTHER

Symbol	Description	Part No.
	Lever switch (HIGH FILTER)	ASK-090
	Lever switch (FM MUTING)	ASK-090
	Nut (9ϕ)	B71-004
	Inside-toothed washer	ABE-001

RESISTORS

Symbol	Description			Part No.
	Variable (BASS)	50k		ACV-159
	Variable (TREBLE)	50k		ACV-160
R1	Carbon film	510		RD¼PS 511J
R2	Carbon film	510		RD¼PS 511J
R3	Carbon film	100	½W	RD½PS 101J
R4	Carbon film	100	½W	RD½PS 101J
R5	Carbon film	240k		RD¼PS 244J
R6	Carbon film	240k		RD¼PS 244J
R7	Carbon film	47k		RD¼PS 473J
R8	Carbon film	47k		RD¼PS 473J
R9	Carbon film	100k		RD¼PS 104J
R10	Carbon film	100k		RD¼PS 104J
R11	Carbon film	2.7k		RD¼PS 272J
R12	Carbon film	2.7k		RD¼PS 272J
R13	Carbon film	47k		RD¼PS 473J
R14	Carbon film	47k		RD¼PS 473J
R15	Carbon film	2.7k		RD¼PS 272J
R16	Carbon film	2.7k		RD¼PS 272J
R17	Carbon film	6.8k		RD¼PS 682J
R18	Carbon film	6.8k		RD¼PS 682J
R19	Carbon film	10k		RD¼PS 103J
R20	Carbon film	10k		RD¼PS 103J
R21	Carbon film	470k		RD¼PS 474J
R22	Carbon film	470k		RD¼PS 474J

CAPACITORS

Symbol	Description			Part No.
C1	Electrolytic	0.47	35V	CSZA R47M 35
C2	Electrolytic	0.47	35V	CSZA R47M 25
C3	Ceramic	56p	50V	CCDSL 560K 50
C4	Ceramic	56p	50V	CCDSL 560K 50
C5	Electrolytic	220	25V	CEA 221P 25
C6	Electrolytic	220	25V	CEA 221P 25
C7	Ceramic	10p	50V	CCDSL 100F 50
C8	Ceramic	10p	50V	CCDSL 100F 50
C9	Electrolytic	47	6V	CEA 470P 6
C10	Electrolytic	47	6V	CEA 470P 6
C11	Ceramic	330p	50V	CKDYB 331K 50
C12	Ceramic	330p	50V	CKDYB 331K 50
C13	Electrolytic	4.7	25V	CEANL 4R7P 25
C14	Electrolytic	4.7	25V	CEANL 4R7P 25
C15	Mylar	0.012	50V	CQMA 123J 50
C16	Mylar	0.012	50V	CQMA 123J 50
C17	Polystyrene film	680p	50V	CQSA 681J 50
C18	Polystyrene film	680p	50V	CQSA 681J 50
C19	Mylar	0.027	50V	CQMA 273J 50
C20	Mylar	0.027	50V	CQMA 273J 50
C21	Ceramic	8200p	50V	CKDYA 822J 50
C22	Ceramic	8200p	50V	CKDYA 822J 50
C23	Ceramic	2700p	50V	CKDYA 272J 50
C24	Ceramic	2700p	50V	CKDYA 272J 50

12.6 POWER AMPLIFIER ASSEMBLY 1 (GWH-101)

Parts List

SEMICONDUCTORS

Symbol	Description	Part No.
Q1	Transistor	2SA798-F (2SA842-GR)
Q2	Transittor	2SA798-F (2SA842-GR)
Q3	Transistor	2SC1438-V (2SC1451-B)
Q4	Transistor	2SC1438-V (2SC1451-B)
D1	Diode	1S2473
D2	Diode	1S2473

OTHERS

Symbol	Description	Part No.
L1	AF choke coil	T63-009
L2	AF choke coil	T63-009
S1	Relay	ASR-018

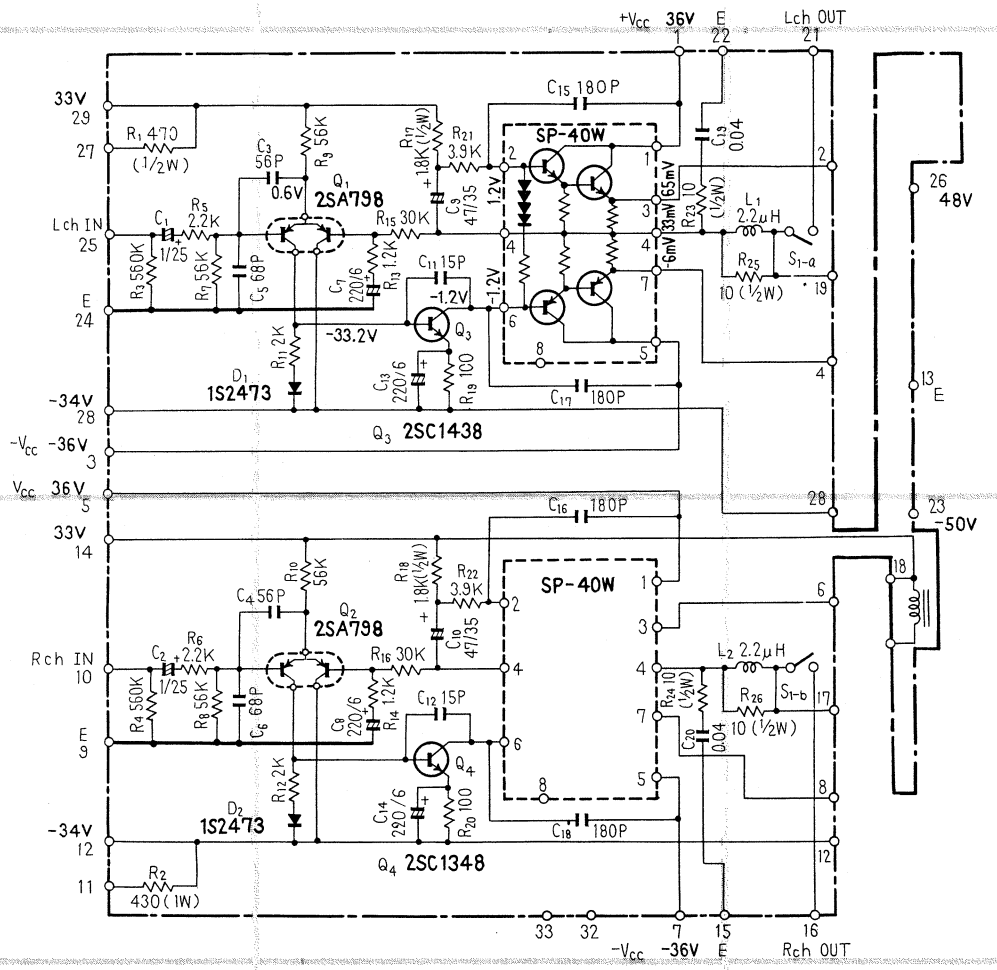
RESISTORS

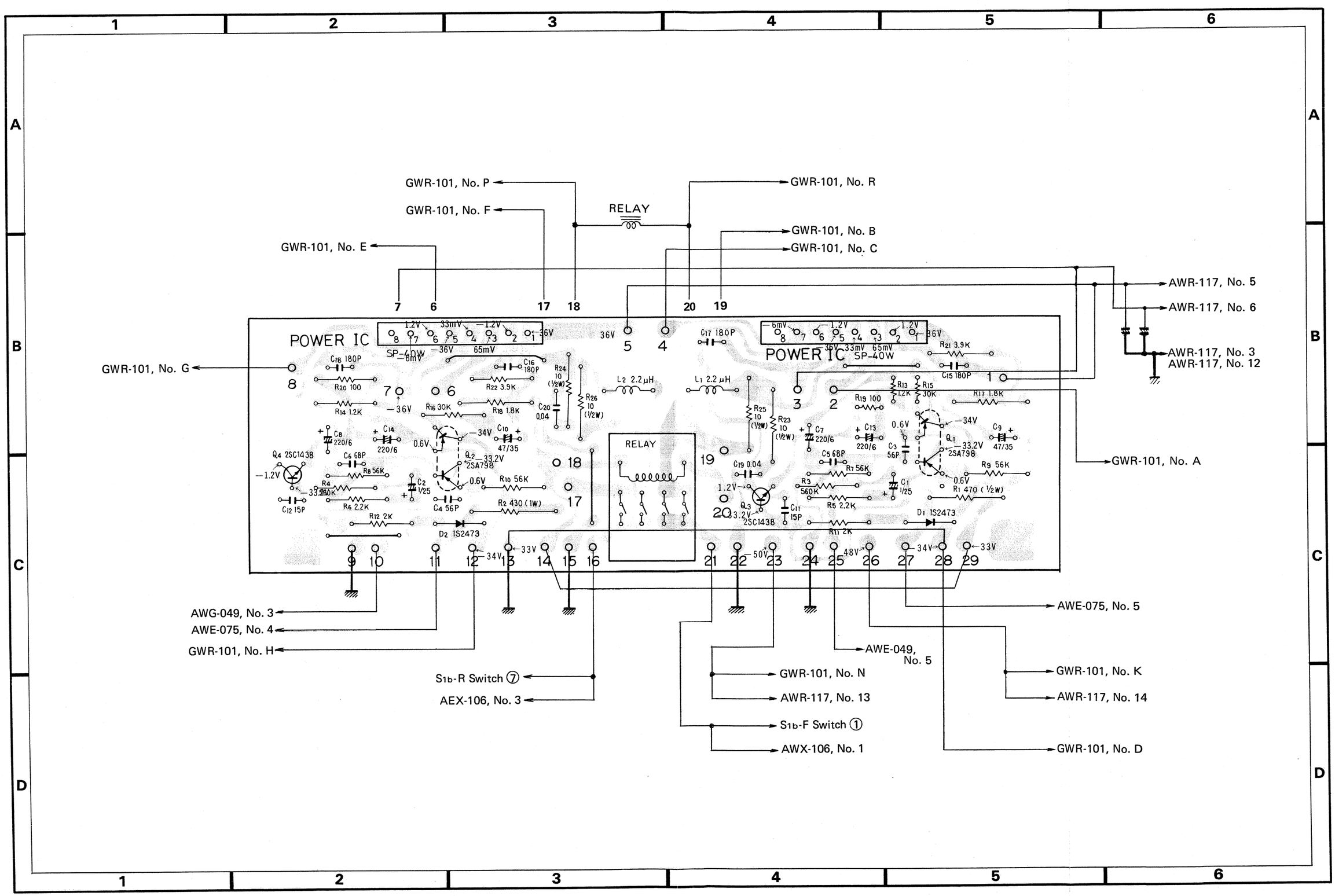
Symbol	Description			Part No.
R1	Carbon film	470	½W	RD½PS 471J
R2	Metal oxide film	430	1W	RS1P 431J
R3	Carbon film	560k		RD¼PS 564J
R4	Carbon film	560k		RD¼PS 564J
R5	Carbon film	2.2k		RD¼PS 222J
R6	Carbon film	2.2k		RD¼PS 222J
R7	Carbon film	56k		RD¼PS 563J
R8	Carbon film	56k		RD¼PS 563J
R9	Carbon film	56k		RD¼PS 563J
R10	Carbon film	56k		RD¼PS 563J
R11	Carbon film	2k		RD¼PS 202J
R12	Carbon film	2k		RD¼PS 202J
R13	Carbon film	1.2k		RD¼VS 122J
R14	Carbonf film	1.2k		RD¼PS 122J
R15	Carbon film	30k		RD¼VS 303J
R16	Carbon film	30k		RD¼PS 303J
R17	Carbon film	1.8k	½W	RD½PS 182J
R18	Carbon film	1.8k	½W	RD½PS 182J
R19	Carbon film	100		RD¼PSF 101J
R20	Carbon film	100		RD¼PSF 101J
R21	Carbon film	3.9k		RD¼PS 392J
R22	Carbon film	3.9k		RD¼PS 392J
R23	Carbon film	10	½W	RD½PSF 100J
R24	Carbon film	10	½W	RD½PSF 100J
R25	Carbon film	10	½W	RD½PSF 100J
R26	Caroon film	10	½W	RD½PSF 100J

CAPACITORS

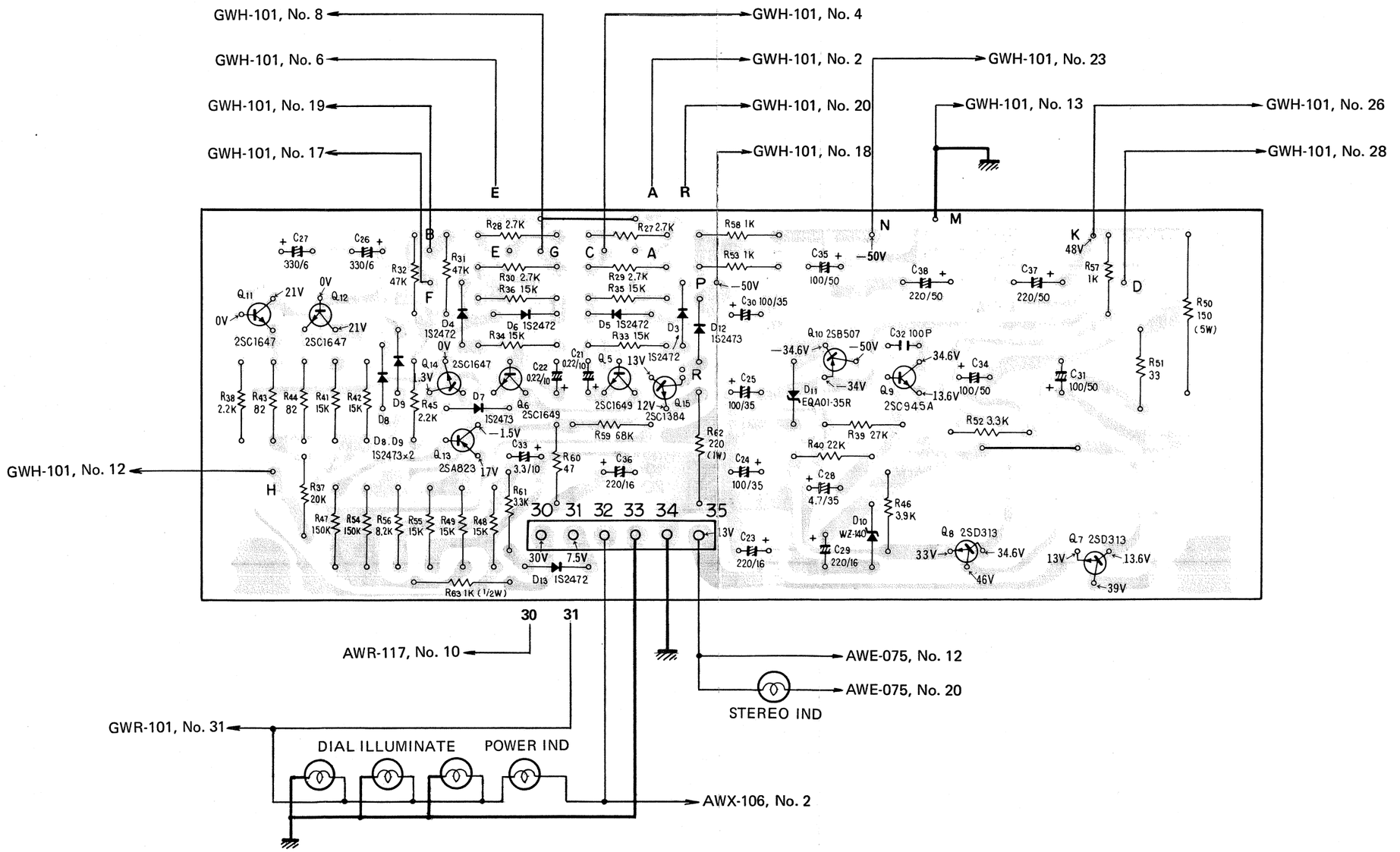
Symbol	Description			Part No.
C1	Electrolytic	1	25V	CSZA 010M 25
C2	Electrolytic	1	25V	CSZA 010M 25
C3	Ceramic	56p	50V	CCDSL 560K 50
C4	Ceramic	56p	50V	CCDSL 560K 50
C5	Ceramic	68p	50V	CCDSL 680K 50
C6	Ceramic	68p	50V	CCDSL 680K 50
C7	Electrolytic	220	6V	CEA 221P 6
C8	Electrolytic	220	6V	CEA 221P 6
C9	Electrolytic	47	35V	CEA 470P 35
C10	Electrolytic	47	35V	CEA 470P 35
C11	Ceramic	15p	50V	CCDSL 150K 50
C12	Ceramic	15P	50V	CCDSL 150K 50
C13	Electrolytic	220	6V	CEA 221P 6
C14	Electrolytic	220	6V	CEA 221P 6
C15	Ceramic	180p	500V	CCDSL 181K 500
C16	Ceramic	180p	500V	CCDSL 181K 500
C17	Ceramic	180p	500V	CCDSL 181K 500
C18	Ceramic	180p	500V	CCDSL 181K 500
C19	Ceramic	0.04	50V	CKDYF 403Z 50
C20	Ceramic	0.04	50V	CKDYF 403Z 50

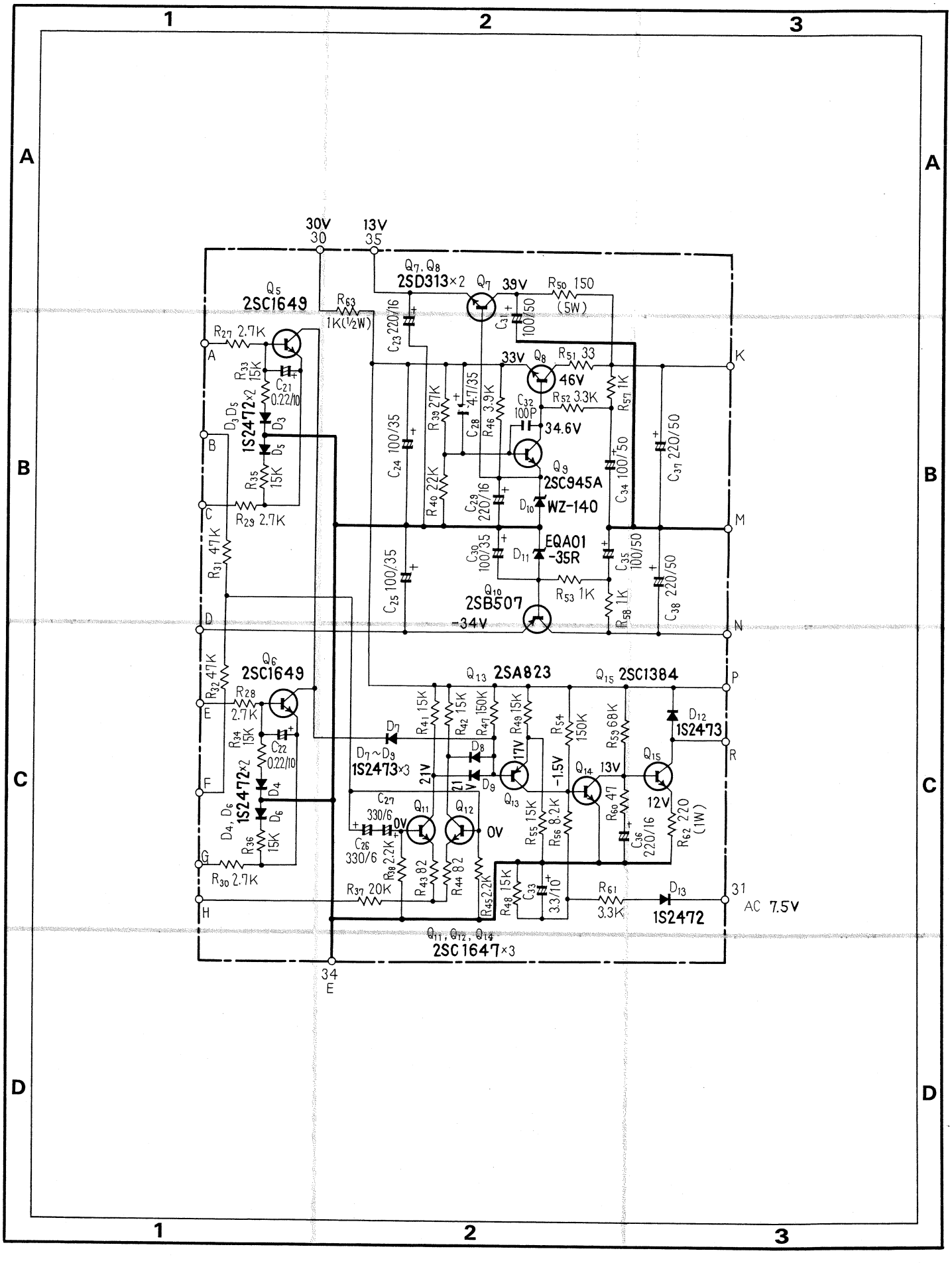
Power Amplifier Assembly 1 (GWH-101)




GWR-101, No. P
GWR-101, No. F
GWR-101, No. E
RELAY
GWR-101, No. R
GWR-101, No. B
GWR-101, No. C
AWR-117, No. 5
AWR-117, No. 6
AWR-117, No. 3
AWR-117, No. 12
GWR-101, No. A
GWR-101, No. G
POWER IC
SP-40W
POWER IC
SP-40W
RELAY
AWG-049, No. 3
AWE-075, No. 4
GWR-101, No. H
S1b-R Switch ⑦
AEX-106, No. 3
AWE-075, No. 5
AWE-049, No. 5
GWR-101, No. N
AWR-117, No. 13
S1b-F Switch ①
AWX-106, No. 1
GWR-101, No. K
AWR-117, No. 14
GWR-101, No. D

12.7 POWER AMPLIFIER ASSEMBLY 2 (GWR-101)




30V
30
13V
35
Q5
2SC1649
R63
1K(½W)
Q7, Q8
2SD313×2
Q7
39V
R50 150
(5W)
C23 220/16
C31 100/50
R27 2.7K
A
R33 15K
C21 0.22/10
D3 D5
1S2472×2
D3
D5
B
R35 15K
R29 2.7K
C
R31 47K
33V
Q8
R51 33
46V
R52 3.3K
R57 1K
C32 100P
34.6V
R39 27K
C28 4.7/35
R46 3.9K
C24 100/35
R40 22K
Q9
2SC945A
C29 220/16
D10 WZ-140
C34 100/50
C37 220/50
K
M
C30 100/35
D11 EQA01
-35R
C35 100/50
C25 100/35
R53 1K
Q10
2SB507
-34V
R58 1K
C38 220/50
D
N
R32 47K
Q6
2SC1649
R28 2.7K
E
R34 15K
C22 0.22/10
F
D4, D6
1S2472×2
D4
D6
R36 15K
G
R30 2.7K
Q13 2SA823
Q15 2SC1384
P
R41 15K
R42 15K
R47 150K
R49 15K
R54 150K
R59 68K
D12
1S2473
R
D7
D7~D9
1S2473×3
D8
D9
17V
-1.5V
Q14
13V
Q15
21V
21V
Q13
C27 330/6
Q11
Q12
0V
0V
R55 15K
R56 8.2K
R60 47
12V
C26 330/6
R38 2.2K
R43 82
R44 82
R45 2.2K
C36 220/16
R62 220
(1W)
R37 20K
R48 15K
C33 3.3/10
R61 3.3K
D13
1S2472
31
AC 7.5V
H
Q11, Q12, Q14
2SC1647×3
34
E
1
2
3
A
B
C
D

Parts List of Power Amplifier Assembly 2 (GWR-101)

SEMICONDUCTORS

Symbol	Description	Part No.
Q5	Transistor	2SC1649-N (2SC869-C)
Q6	Transistor	2SC1649-N (2SC869-C)
Q7	Transistor	2SD313-D (2SD526-R)
Q8	Transistor	2SD313-D (2SD526-R)
Q9	Transistor	2SC945A-Q
Q10	Transistor	2SB507-D (2SB596-R)
Q11	Transistor	2SC1647-P (2SC945A-Q)
Q12	Transistor	2SC1647-P (2SC945A-Q)
Q13	Transistor	2SA823-P (2SA733-Q)
Q14	Transistor	2SC1647-P (2SC945A-Q)
Q15	Transistor	2SC1384-Q (2SC1166-Y)
D3	Diode	1S2472 (1S1554)
D4	Diode	1S2472 (1S1554)
D5	Diode	1S2472 (1S1554)
D6	Diode	1S2472 (1S1554)
D7	Diode	1S2473 (1S1555)
D8	Diode	1S2473 (1S1555)
D9	Diode	1S2473 (1S1555)
D10	Zener diode	WZ-140
D11	Zener diode	EQA01-35R
D12	Diode	1S2473 (1S1555)
D13	Diode	1S2472 (1S1554)

OTHERS

Symbol	Description	Part No.
	Heat sink	ANH-259
	Insulator pipe	ADX-016

RESISTORS

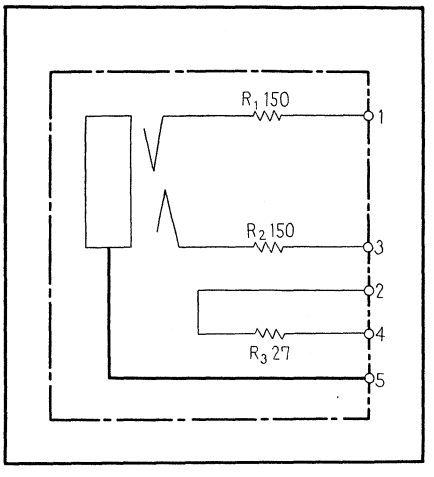
Symbol	Description		Part No.
R27	Carbon film	2.7k	RD¼PS 272J
R28	Carbon film	2.7k	RD¼PS 272J
R29	Carbon iflm	2.7k	RD¼PS 272J
R30	Carbon film	2.7k	RD¼PS 272J

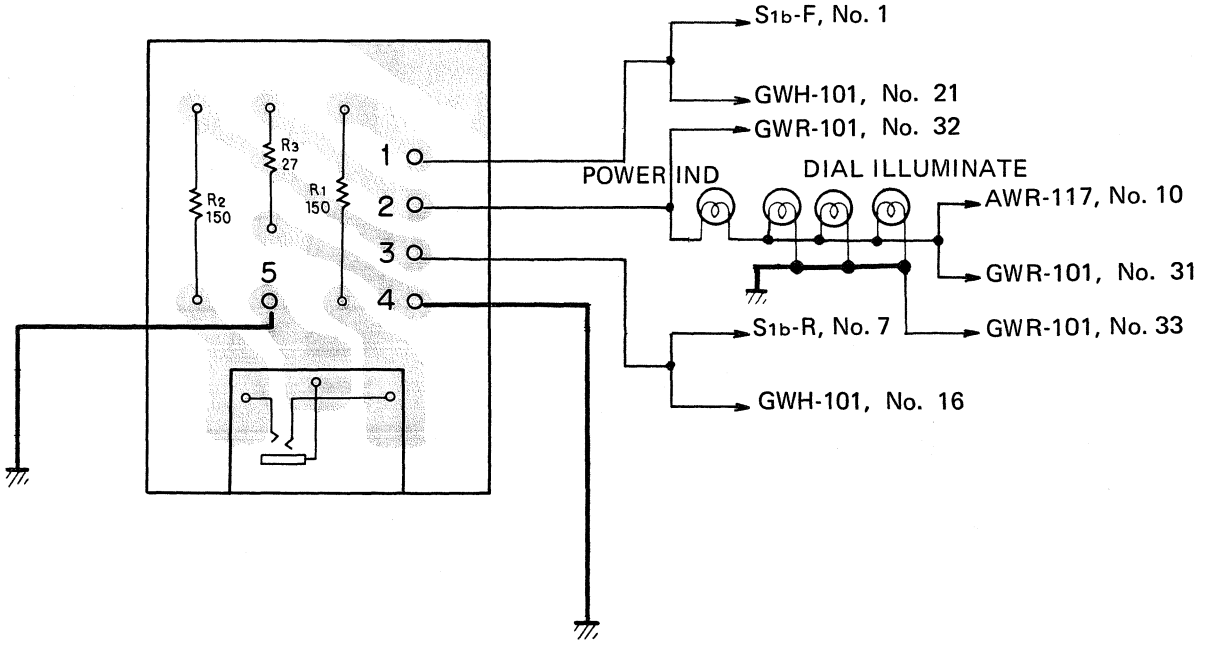
Symbol	Description			Part No.
R31	Carbon film	47k		RD¼PS 473J
R32	Carbon film	47k		RD¼PS 473J
R33	Carbon film	15k		RD¼PS 153J
R34	Carbon film	15k		RD¼PS 153J
R35	Carbonnfilm	15k		RD¼PS 153J
R36	Carbon film	15k		RD¼PS 153J
R37	Carbon film	20k		RD¼PS 203J
R38	Carbon film	2.2k		RD¼PS 222J
R39	Carbon film	27k		RD¼PS 273J
R40	Carbon film	22k		RD¼PS 223J
R41	Carbon film	15k		RD¼PS 153J
R42	Carbon film	15k		RD¼PS 153J
R43	Carbon film	82		RD¼PS 820J
R44	Carbon film	82		RD¼PS 820J
R45	Carbon film	2.2k		RD¼PS 222J
R46	Carbon film	3.9k		RD¼PS 392J
R47	Carbon film	150k		RD¼PS 154J
R48	Carbon film	15k		RD¼PS 153J
R49	Carbon film	15k		RD¼PS 153J
R50	Wire wound	150	5W	RT5B 151K
R51	Carbon film	33		RD¼PSF 330J
R52	Carbon film	3.3k		RD¼PS 332J
R53	Carbon film	1k		RD¼PS 102J
R54	Carbon film	150k		RD¼PS 154J
R55	Carbon film	15k		RD¼PS 153J
R56	Carbon film	8.2k		RD¼PS 822J
R57	Carbon film	1k		RD¼PSF 102J
R58	Carbon film	1k		RD¼PSF 102J
F59	Carbon film	68k		RD¼PS 683J
R60	Carbon film	47		RD¼PS 470J
R61	Carbon film	3.3k		RD¼PS 332J
R62	Metal oxide	220	1W	RS1P 221J
R63	Carbon film	1k	½W	RD½PS 102J

CAPACITOR

Symbol	Description			Part No.
C21	Electrolytic	0.22	10V	CSSA R22M 10
C22	Electrolytic	0.22	10V	CSSA R22M 10
C23	Electrolytic	220	16V	CEA 221P 16
C24	Electrolytic	100	35V	CEA 101P 35
C25	Electrolytic	100	35V	CEA 101P 35
C26	Electrolytic	330	6V	CEA 331P 6
C27	Electrolytic	330	6V	CEA 331P 6
C28	Electrolytic	4.7	35V	CEA 4R7P 35
C29	Electrolytic	220	16V	CEA 221P 16
C30	Electrolytic	100	35V	CEA 101P 35
C31	Electrolytic	100	50V	CEA 101P 50
C32	Ceramic	100p	50V	CCDSL 101K 50
C33	Electrolytic	3.3	50V	CEA 3R3P 50
C34	Electrolytic	100	50V	CEA 101P 50
C35	Electrolytic	100	50V	CEA 101P 50
C36	Electrolytic	220	16V	CEA 221P 16
C37	Electrolytic	220	50V	CEA 221P 50
C38	Electrolytic	220	50V	CEA 221P 50

12.8 HEADPHONE ASSEMBLY (AWX-106)

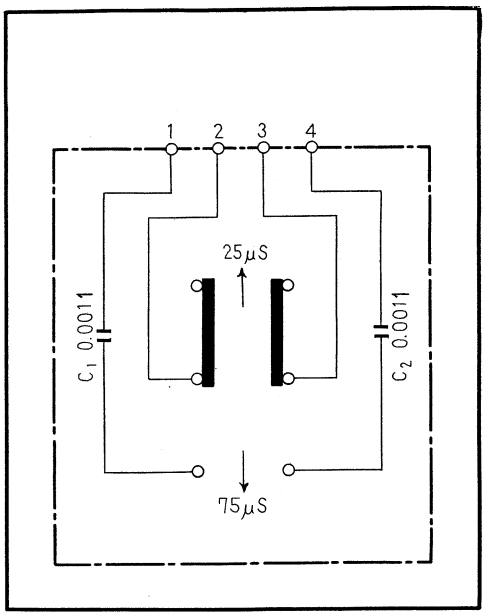


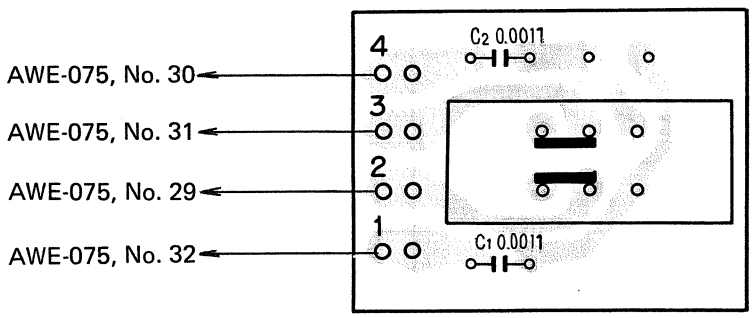


Parts List

Symbol	Description	Part No.
	Headphone jack	AKN-009
R1	Metal oxide film 150 2W	RS2P 151J
R2	Metal oxide film 150 2W	RS2P 151J
R3	Carbon film 27	RD¼PS 270J

12.9 DE-EMPHASIS SWITCH ASSEMBLY (AWX-095)





Parts List

CAPACITORS

Symbol	Description			Part No.
C1	Mylar	1100p	50V	CQMA 112J 50
C2	Mylar	1100p	50V	CQMA 112J 50
	Slide switch			ASH-015-0

12.10 POWER SUPPLY ASSEMBLY (AWR-117)

Parts List

SEMICONDUCTORS

Symbol	Description	Part No.
D1	Diode	1S1886 (S1B01-02)
D2	Diode	1S1886 (S1B01-02)
D3	Diode	1S1886 (S1B01-02)
D4	Diode	1S1886 (S1B01-02)
D5	Diode	SR3AM-4
D6	Diode	SR3AM-4
D7	Diode	SR3AM-4
D8	Diode	SR3AM-4

OTHERS

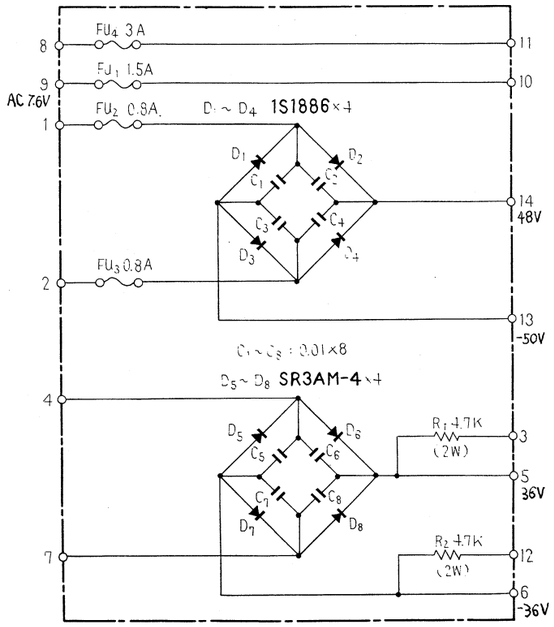
Symbol	Description	Part No.
	Fuse clip	AKR-013
	Fuse clip	AKR-030

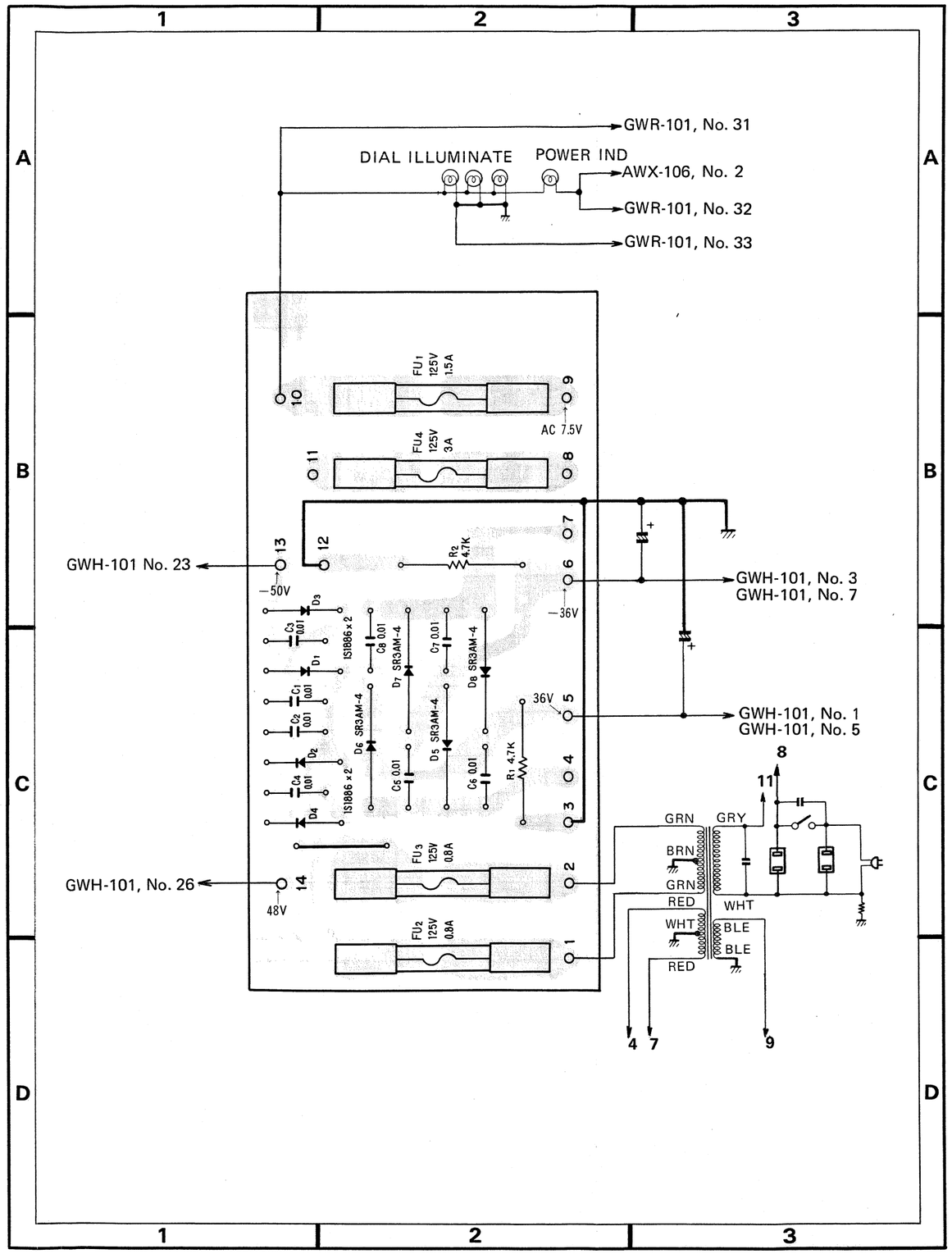
RESISTORS

Symbol	Description	Part No.
R1	Metal oxide film 4.7k 2W	RS2P 472K
R2	Metal oxide film 4.7k 2W	RS2P 472K

CAPACITORS

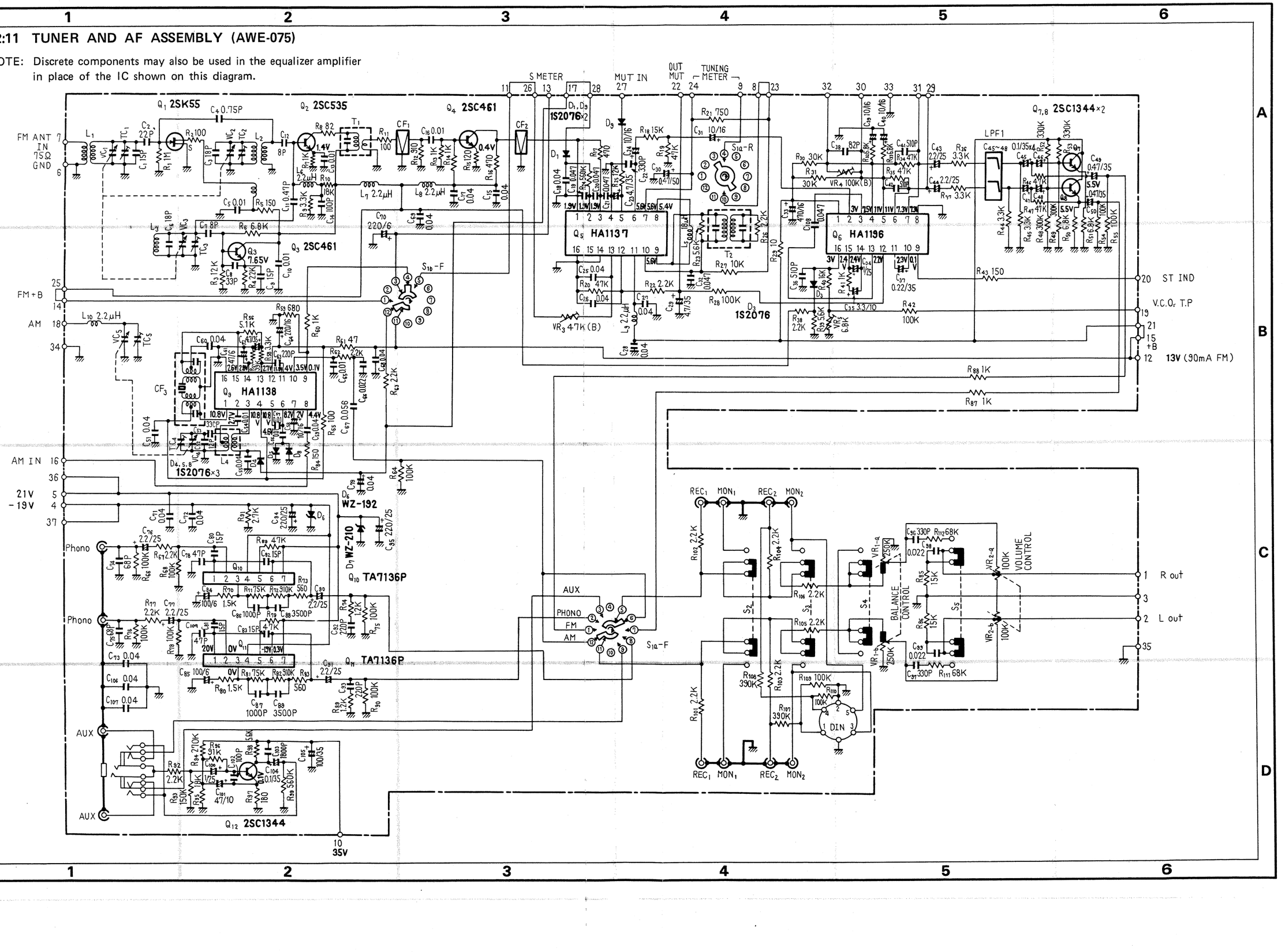
Symbol	Description	Part No.
C1	Ceramic 0.01 150V	ACG-004
C2	Ceramic 0.01 150V	ACG-004
C3	Ceramic 0.01 150V	ACG-004
C4	Ceramic 0.01 150V	ACG-004
C5	Ceramic 0.01 150V	ACG-004
C6	Ceramic 0.01 150V	ACG-004
C7	Caramic 0.01 150V	ACG-004
C8	Ceramic 0.01 150V	ACG-004





12:11 TUNER AND AF ASSEMBLY (AWE-075)

NOTE: Discrete components may also be used in the equalizer amplifier in place of the IC shown on this diagram.



AWG-049, No. 10
AWG-049, No. 9
37 36
25 26 22 17 11 14
AWG-049, No. 1
AWG-049, No. 2
AWG-049, No. 7
AWG-049, No. 8
AWG-049, No. 6
35 3 2 1
33
32 → AWX-095, No. 1
31 → AWX-095, No. 3
29 → AWX-095, No. 2
30 → AWX-095, No. 4
GWH-101, No. 11 ← 4
GWH-101, No. 27 ← 5
20
10 → GWR-101, No. 30
STEREO IND
12 → GWR-101, No. 35
16 18 24 21
13 23
FM 75Ω UNBALANCE
RM 300Ω BALANCE
GND
AM
YEL
RED
BLK
TUNING METER
SIGNAL METER

Parts List of Tuner and AF Assembly (AWE-075)

SEMICONDUCTORS

Symbol	Description	Part No.
Q1	Transistor	2SK55-D
Q2	Transistor	2SC535-A
Q3	Transistor	2SC461-B
Q4	Transistor	2SC461-B
Q5	IC	HA1137
Q6	IC	HA1196
Q7	Transistor	2SC1344-D
Q8	Transistor	2SC1344-D
Q9	IC	HA1138
Q10	IC	TA7136P1
Q11	IC	TA7136P1
Q12	Transistor	2SC1344-D
D1	Diode	1S2076
D3	Diode	1S2076
D4	Diode	1S2076
D5	Diode	1S2076
D6	Zener diode	WZ-192
D7	Zener diode	MZ322-A
D8	Diode	1S2076
D9	Diode	1S2076

TRANSFORMERS AND COILS

Symbol	Description	Part No.
L1	FM antenna coil	ATC-023
L2	FM RF coil	ATC-024
L3	FM oscillator coil	ATC-025
L4	AM oscillator coil	ATB-013
L5	Micro inductor	ATH-007
L6	RF choke coil	T24-028
L7	RF choke coil	T24-028
L8	RF choke coil	T24-028
L9	RF choke coil	T24-028
L10	RF choke coil	T24-028
T1	FM matching transformer	ATE-008
T2	FM IF transformer	T73-035
CF1	FM ceramic filter	ATF-013
CF2	FM ceramic filter	ATF-013
CF3	AM ceramic filter	ATF-027
LPF1	Low pass filter	ATF-033

SWITCHES

Symbol	Description	Part No.
S1	Rotary switch (FUNCTION)	ASD-049
S2	Lever switch (LOUDNESS)	ASK-090
S3	Lever switch (MODE)	ASK-090
S4	Lever switch (TAPE MONITOR)	ASK-090
S5	Lever switch (TAPE MONITOR)	ASK-090

OTHERS

Symbol	Description	Part No.
J1	Phone jack (PHONES)	AKN-011
	Nut (M9)	B71-004
	In side-toothed washer	ABE-001
	Terminal	AKB-027
	DIN connector socket	AKP-011

RESISTORS

Symbol	Description	Part No.
VR1	Variable (BALANCE) 250k	ACV-135
VR2	Variable (VOLUME) 100k	ACV-179
VR3	Semi-fixed	C92-048
VR4	Semi-fixed	C92-047
VR5	Semi-fixed	ACP-023
R1	Carbon film 1M	RD¼PS 105J
R2	Carbon film 100	RD¼VS 101J
R3	Carbon film 12k	RD¼VS 123J
R4	Carbon film 2.2k	RD¼VS 222J
R5	Carbon film 150	RD¼PS 151J
R6	Carbon film 6.8k	RD¼VS 682J
R7	Carbon film 1k	RD¼VS 102J
R8	Carbon film 82	RD¼VS 820J
R9	Carbon film 3.3k	RD¼VS 332J
R10	Carbon film 18k	RD¼VS 183J
R11	Carbon film 100	RD¼PS 101J
R12	Carbon film 910	RD¼PM 911J
R13	Carbon film 1k	RD¼PS 102J
R14	Carbon film 11k	RD¼PS 113J
R15	Carbon film 120	RD¼PS 121J
R16	Carbon film 470	RD¼PS 471J
R17	Carbon film 470	RD¼PS 471J
R18	Carbon film 15k	RD¼PS 153J
R19	Carbon film 47k	RD¼PS 473J
R20	Carbon film 47k	RD¼PS 473J
R21	Carbon film 750	RD¼PS 751J
R22	Carbon film 2.2k	RD¼PS 222J
R23	Carbon film 5.6k	RD¼PS 562J
R24	Carbon film 560k	RD¼PS 564J
R25	Carbon film 12k	RD¼PS 123J
R26	Carbon film 2.2k	RD¼PS 222J
R27	Carbon film 10k	RD¼PS 103J
R28	Carbon film 100k	RD¼PS 104J
R29	Carbon film 10	RD¼PS 100J
R30	Carbon film 30k	RD¼PS 303J
R31	Carbon film 30k	RD¼PS 303J
R32	Carbon film 6.8k	RD¼PS 682J
R33	Carbon film 6.8k	RD¼PS 682J
R34	Carbon film 47k	RD¼PS 473J
R35	Carbon film 47k	RD¼PS 473J
R36	Carbon film 3.3k	RD¼PS 332J
R37	Carbon film 3.3k	RD¼PS 332J
R38	Carbon film 2.2k	RD¼PS 222J
R39	Carbon film 5.6k	RD¼PS 562J
R40	Metal film 16k	RN¼PT 1602F
R41	Carbon film 1k	RD¼PS 102J
R42	Carbon film 100k	RD¼PS 104J
R43	Carbon film 150	RD¼PS 151J
R44	Carbon film 3.3k	RD¼PS 332J
R45	Carbon film 3.3k	RD¼PS 332J
R46	Carbon film 47k	RD¼PS 473J
R47	Carbon film 47k	RD¼PS 473J
R48	Carbon film 300k	RD¼PS 304J
R49	Carbon film 300k	RD¼PS 304J
R50	Carbon film 6.8k	RD¼PS 682J
R51	Carbon film 6.8k	RD¼PS 682J
R52	Carbon film 330k	RD¼PS 334J
R53	Carbon film 330k	RD¼PS 334J
R54	Carbon film 100k	RD¼PS 104J
R55	Carbon film 100k	RD¼PS 104J
R56	Carbon film 5.1k	RD¼PS 512J
R57	Carbon film 39k	RD¼PS 393J
R58	Carbon film 3.3k	RD¼PS 332J
R59	Carbon film 680	RD¼PS 681J
R60	Carbon film 1k	RD¼PS 102J
R61	Carbon film 47	RD¼PS 470J
R62	Carbon film 2.2k	RD¼PS 222J
R63	Carbon film 2.2k	RD¼PS 222J
R64	Carbon film 100k	RD¼PS 104J
R65	Carbon film 100	RD¼PS 101J
R66	Carbon film 100k	RD¼PS 104J
R67	Carbon film 2.2k	RD¼PS 222J
R68	Carbon film 100k	RD¼PS 104J
R69	Carbon film 47k	RD¼PS 473J
R70	Carbon film 1.5k	RD¼PS 152J
R71	Carbon film 75k	RD¼PS 753J
R72	Carbon film 910k	RD¼PS 914J
R73	Carbon film 560	RD¼PS 561J
R74	Carbon film 1.2k	RD¼PS 122J
R75	Carbon film 100k	RD¼PS 104J
R76	Carbon film 100k	RD¼PS 104J
R77	Carbon film 2.2k	RD¼PS 222J
R78	Carbon film 100k	RD¼PS 104J
R79	Carbon film 47k	RD¼PS 473J
R80	Carbon film 1.5k	RD¼PS 152J
R81	Carbon film 75k	RD¼PS 753J
R82	Carbon film 910k	RD¼PS 914J
R83	Carbon film 560	RD¼PS 561J
R84	Carbon film 150	RD¼PS 151J
R85	Carbon film 15k	RD¼PS 153J
R86	Carbon film 15k	RD¼PS 153J
R87	Carbon film 1k	RD¼PS 102J
R88	Carbon film 1k	RD¼PS 102J
R89	Carbon film 1.2k	RD¼PS 122J
R90	Carbon film 100k	RD¼PS 104J
R91	Carbon film 2.7k	RD¼PS 272J
R92	Carbon film 2.2k	RD¼PS 222J
R93	Carbon film 150k	RD¼PS 154J
R94	Carbon film 270k	RD¼PS 274J
R95	Carbon film 18k	RD¼PS 183J
R96	Carbon film 91k	RD¼PS 913J
R97	Carbon film 180	RD¼PS 181J
R98	Carbon film 5.6k	RD¼PS 562J
R99	Carbon film 560k	RD¼PS 564J
R100	Carbon film 1k	RD¼PS 102J
R101	Carbon film 2.2k	RD¼PS 222J
R102	Carbon film 2.2k	RD¼PS 222J
R103	Carbon film 2.2k	RD¼PS 222J
R104	Carbon film 2.2k	RD¼PS 222J
R105	Carbon film 2.2k	RD¼PS 222J
R106	Carbon film 2.2k	RD¼PS 222J
R107	Carbon film 390k	RD¼PS 394J
R108	Carbon film 390k	RD¼PS 394J
R109	Carbon film 100k	RD¼PS 104J
R110	Carbon film 100k	RD¼PS 104J
R111	Carbon film 68k	RD¼PS 683J
R112	Carbon film 68k	RD¼PS 683J

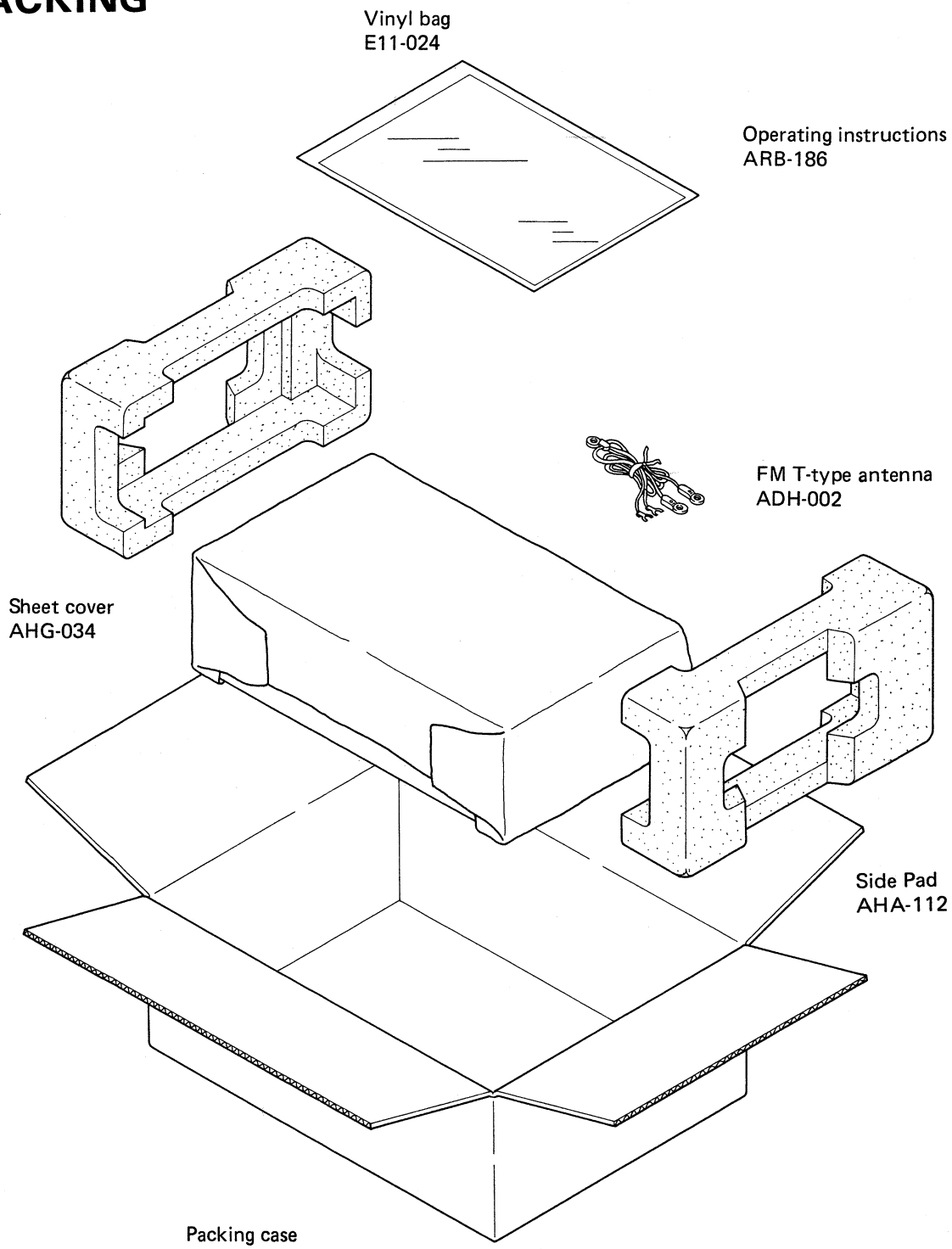
CAPACITORS

Symbol	Description			Part No.
	Variable capacitor			ACK-012
	Ceramic trimmer			ACM-006
C1	Ceramic	15p	50V	CCDTH 150K 50
C2	Ceramic	22p	50V	CCDSL 220K 50
C3	Ceramic	18p	50V	CCDTH 180K 50
C4	Ceramic	0.75p	500V	CGB R 75K 500
C5	Ceramic	0.01	50V	CKDYF 103Z 50

Symbol	Description			Part No.
C6	Ceramic	18p	50V	CCDSH 180K 50
C7	Ceramic	8p	50V	CCDCH 080F 50
C8	Ceramic	33p	50V	CCDCH 330K 50
C9	Ceramic	15p	50V	CCDCH 150K 50
C10	Ceramic	0.01	50V	CKDYB 103K 50
C11	Ceramic	0.47p	5000V	CGB R47K 500
C12	Ceramic	8p	50V	CCDSL 080F 50
C13	Ceramic	0.01	50V	CCDSL 103K 50
C14	Ceramic	100p	50V	CCDSL 101K 50
C15	Ceramic	0.04	50V	CKDYF 403Z 50
C16	Ceramic	0.01	50V	CKDYF 103Z 50
C17	Ceramic	0.04	50V	CKDYF 403Z 50
C18	Ceramic	0.04	50V	CKDYF 403Z 50
C19	Ceramic	0.047	50V	CKDBC 473Z 50
C20	Ceramic	0.047	50V	CKDBC 473Z 50
C21	Ceramic	0.047	50V	CKDBC 473Z 50
C22	Ceramic	330p	50V	CKDYB 331K 50
C23	Electrolytic	4.7	35V	CEA 4R7P 35
C24	Electrolytic	10	16V	CSZA 100M 16
C25	Ceramic	0.04	50V	CKDYF 403Z 50
C26	Ceramic	0.04	50V	CKDYF 403Z 50
C27	Ceramic	0.04	50V	CKDYF 403Z 50
C28	Ceramic	0.04	50V	CKDYF 403Z 50
C29	Electrolytic	4.7	35V	CEA 4R7P 35
C30	Electrolytic	0.47	50V	CEA R47P 50
C31	Electrolytic	10	16V	CSZA 100M 16
C32	Ceramic	0.047	50V	CKDBC 473Z 50
C33	Electrolytic	470	16V	CEA 471P 16
C34	Electrolytic	1	25V	CSZA 010M 25
C35	Electrolytic	3.3	10V	CSZA 3R3M 10
C36	Polystyrene film	510p	50V	CQSH 511J 50
C37	Electrolytic	0.22	25V	CSZA R22M 25
C38	Ceramic	82p	50V	CCDSL 820K 50
C39	Electrolytic	10	16V	CEA 100P 16
C40	Electrolytic	10	16V	CEA 100P 16
C41	Polystyrene film	510p	50V	CQSA 511J 50
C42	Polystyrene film	510p	50V	CQSA 511J 50
C43	Electrolytic	2.2	25V	CSZA 2R2M 25
C44	Electrolytic	2.2	25V	CSZA 2R2M 25
C45	Electrolytic	0.1	25V	CSZA 0R1M 25
C46	Electrolytic	0.1	25V	CSZA 0R1M 25
C47	Electrolytic	0.1	25V	CSZA 0R1M 25
C48	Electrolytic	0.1	25V	CSZA 0R1M 25
C49	Electrolytic	0.47	25V	CSZA R47M 25
C50	Electrolytic	0.47	25V	CSZA R47M 25
C51	Ceramic	0.04	50V	CKDYF 403Z 50
C52	Ceramic	12p	50V	CCDXL 120K 50
C53	Polystyrene film	330p	50V	CQSA 331J 50
C54	Ceramic	0.01	50V	CKDYF 103Z 50
C55	Ceramic	0.04	50V	CKDYF 403Z 50

Symbol	Description			Part No.
C56	Ceramic	0.01	50V	CKDYF 103Z 50
C57	Ceramic	0.01	50V	CKDYF 103Z 50
C58	Electrolytic	10	16V	CEA 100P 16
C59	Ceramic	0.04	50V	CKDYF 403Z 50
C60	Ceramic	0.04	50V	CKDYF 403Z 50
C61	Electrolytic	47	6V	CEA 470P 6
C62	Electrolytic	4.7	35V	CEA 4R7P 35
C63	Ceramic	220p	50V	CCDSL 221K 50
C64	Electrolytic	220	16V	CEA 221P 16
C65	Ceramic	0.01	50V	CKDYF 103Z 50
C66	Ceramic	0.022	50V	CKDYF 223Z 50
C67	Mylar	0.056	50V	CQMA 563K 50
C68	Ceramic	0.04	50V	CKDYF 403Z 50
C69	Ceramic	0.04	50V	CKDYF 403Z 50
C70	Electrolytic	220	6V	CEA 221P 6
C71	Ceramic	0.04	50V	CKDYF 403Z 50
C72	Ceramic	0.04	50V	CKDYF 403Z 50
C73	Ceramic	0.04	50V	CKDYF 403Z 50
C74	Ceramic	68p	50V	CCDSL 680K 50
C75	Ceramic	68p	50V	CCDSL 680K 50
C76	Electrolytic	2.2	25V	CSZA 2R2M 25
C77	Electrolytic	2.2	25V	CSZA 2R2M 25
C78	Ceramic	47p	50V	CCDSL 470K 50
C79	Ceramic	0.04	50V	CCDSL 403K 50
C80	Ceramic	15p	50V	CCDSL 150K 50
C81	Ceramic	15p	50V	CCDSL 150K 50
C82	Ceramic	15p	50V	CCDSL 150K 50
C83	Ceramic	15p	50V	CCDSL 150K 50
C84	Electrolytic	100	6V	CEA 101P 6
C85	Electrolytic	100	6V	CEA 101P 6
C86	Polystyrene film	1000p	50V	CQSA 102G 50
C87	Polystyrene film	1000p	50V	CQSA 102G 50
C88	Polystyrene film	3500p	50V	CQSA 352G 50
C89	Polystyrene film	3500p	50V	CQSA 352G 50
C90	Electrolytic	2.2	25V	CSZA 2R2M 25
C91	Electrolytic	2.2	25V	CSZA 2R2M 25
C92	Ceramic	220p	50V	CCDSL 221K 50
C93	Ceramic	220p	50V	CCDSL 221K 50
C94	Electrolytic	220	25V	CEA 221P 25
C95	Electrolytic	220	25V	CEA 221P 25
C96	Ceramic	330p	50V	CKDYB 331K 50
C97	Ceramic	330p	50V	CKDYB 331K 50
C98	Mylar	0.022	50V	CQMA 223K 50
C99	Mylar	0.022	50V	CQMA 223K 50
C100	Electrolytic	1	25V	CSZA 010M 25
C101	Electrolytic	47	10V	CEA 470P 10
C102	Ceramic	100p	50V	CCDSL 101K 50
C103	Ceramic	1800p	50V	CKDYB 182K 50
C104	Electrolytic	0.1	35V	CSZA 0R1M 35
C105	Electrolytic	100	35V	CEA 101P 35
C106	Ceramic	0.04	50V	CKDYF 403Z 50
C107	Ceramic	0.04	50V	CKDYF 403Z 50
C108	Mylar	0.047	50V	CQMA 473K 50
C109	Ceramic	47p	50V	CCDSL 470K 50

13. PACKING



OTHERS

Symbol	Description	Part No.
	Vinyl bag (power cord cover) Vinyl cover (ferrite bar-antenna cover)	AHG-023 AHG-040

AM/FM STEREO RECEIVER

SX-650

HG, S

Additional

Service Manual

NOTE:
This leaflet provides the description of the parts applies only to the HG, S models.
For detailed please refer to the Service Manual of SX-650/KCU.

PIONEER®

1. SPECIFICATIONS

Power Requirements . . . . . 120V 60Hz MODEL KC, KU
220V and 240V (Switchable) MODEL HG
110V, 120V, 220V and 240V (Switchable) MODEL S
Power Consumption . . . UL, 80W, 185W (max.) MODEL KC, KU
185W MODEL HG
185W MODEL S

2. CONTRAST OF MISCELLANEOUS PARTS

FUSES

Symbol	Amp	Part No.			Remarks
		KCU type	HG type	S type	
FU1	1.5A 1.6A	AEK-104	. . . . . . AEK-405	AEK-104	
FU2	0.8A	AEK-111	AEK-031	AEK-111	
FU3	0.8A	AEK-111	AEK-031	AEK-111	
FU4	3A 1.6A 1.5A	AEK-101	. . . . . . AEK-405	AEK-101 . . . . . . AEK-104	Primary voltage: 220V, 240V Primary voltage: 110V, 120V

SWITCHES

Symbol	Part Name	Part No.			Remarks
		KCU type	HG type	S type	
S1	Selector	ASA-039	ASA-040	ASA-038	POWER
S2	Plug in selector (Line voltage selector)	. . . .	AKX-037	. . . . . . AKR-033	2-positions 4-positions with fuse holder

TRANSFORMER

Symbol	Part Name	Part No.			Remarks
		KCU type	HG type	S type	
T1	Power transformer	ATT-315 (KC) ATT-303 (KU)	ATT-340	ATT-339	

RESISTOR

Symbol	Part Name	Part No.			Remarks
		KCU type	HG type	S type	
R1	Carbon film 2.2M ½W	RD½PS 225J	. . . . .	. . . . .	

CAPACITORS

Symbol	Part Name	Part No.			Remarks
		KCU type	HG type	S type	
C3	Ceramic 0.01 150V Ceramic 0.01 250V	ACG-003	. . . . . . ACG-001	. . . . . . ACG-001	
C4	Ceramic 0.01 150V Ceramic 0.01 250V Polystyrene 560P 50V	ACG-003 (KC) ACG-001 (KU)	. . . . CQSA 561J 50	. . . . . . ACG-001	
C5	Polystyrene 560P 50V	. . . . .	CQSA 561J 50	. . . . .	

P.C. BOARD ASSEMBLIES

Part Name	Part No.			Remarks
	KCU type	HG type	S type	
De-emphasis switch assembly	AWX-095	. . . .	. . . . . . AWX-100	2-positions (25μs/75μs) 3-positions (25μs/50μs/75μs)
Power supply assembly	AWR-117	AWR-118	AWR-117	

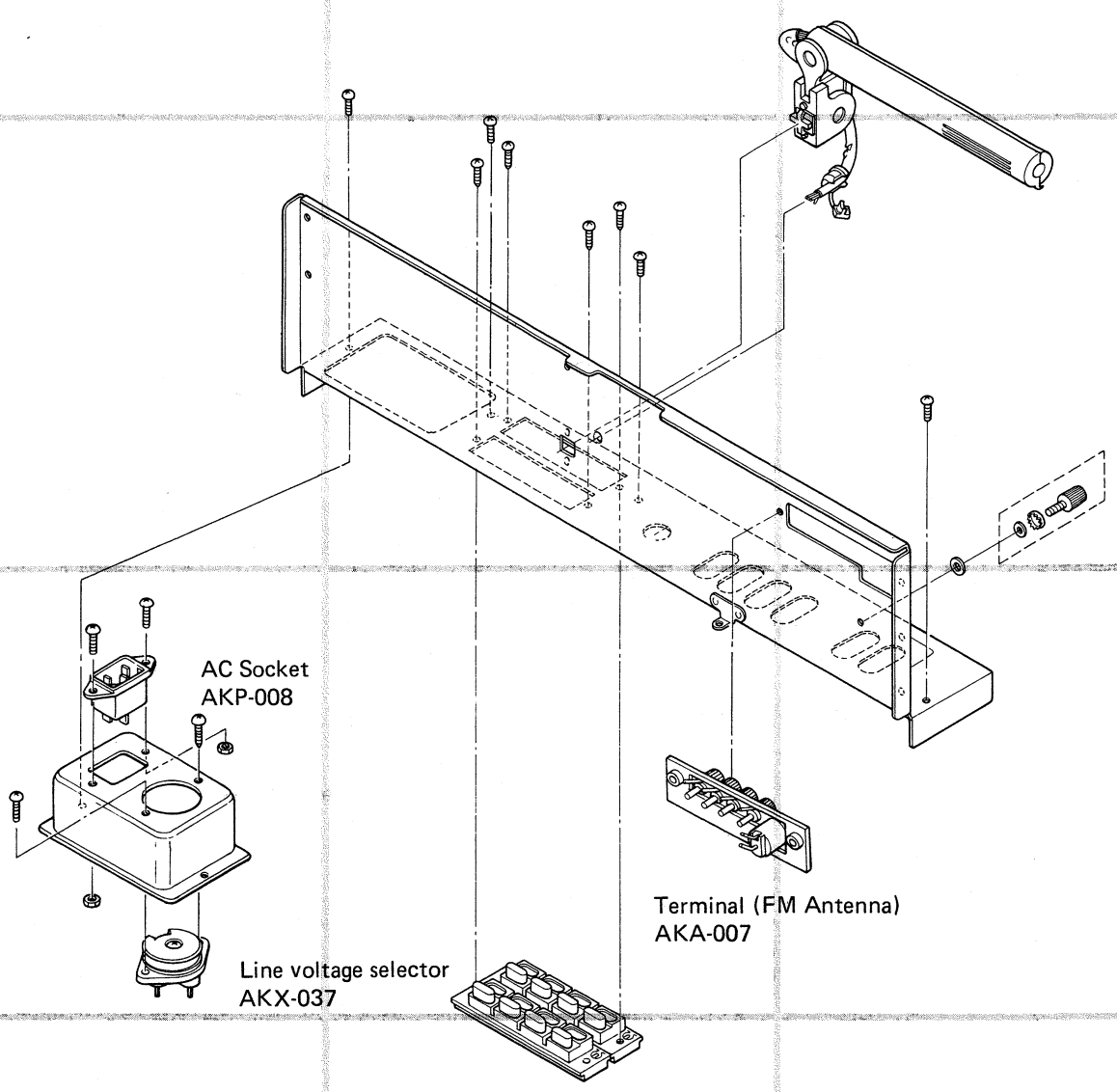
OTHERS

Part Name	Part No.			Remarks
	KCU type	HG type	S type	
AC power cord	ADG-005	. . . . .	ADG-002	
AC socket (OUTLET) AC socket (INLET)	AKP-004	. . . . . . AKP-008	AKP-004	
Woodencabinet Rubber mat Capacitor cover Terminal board (2P)	AAM-054 AEB-075 AEC-279 AEC-294 (KU) AKC-038	AAM-053 AEB-077 AEC-099 . . . . . . AKC-030	AAM-054 AEB-077 AEC-099	
Operating instructions	ARB-186	ARB-187 ARD-095	ARB-195	English German/French
Packing case	AHD-383 (KC) AHD-382 (KU)	AHD-384	AHD-382	

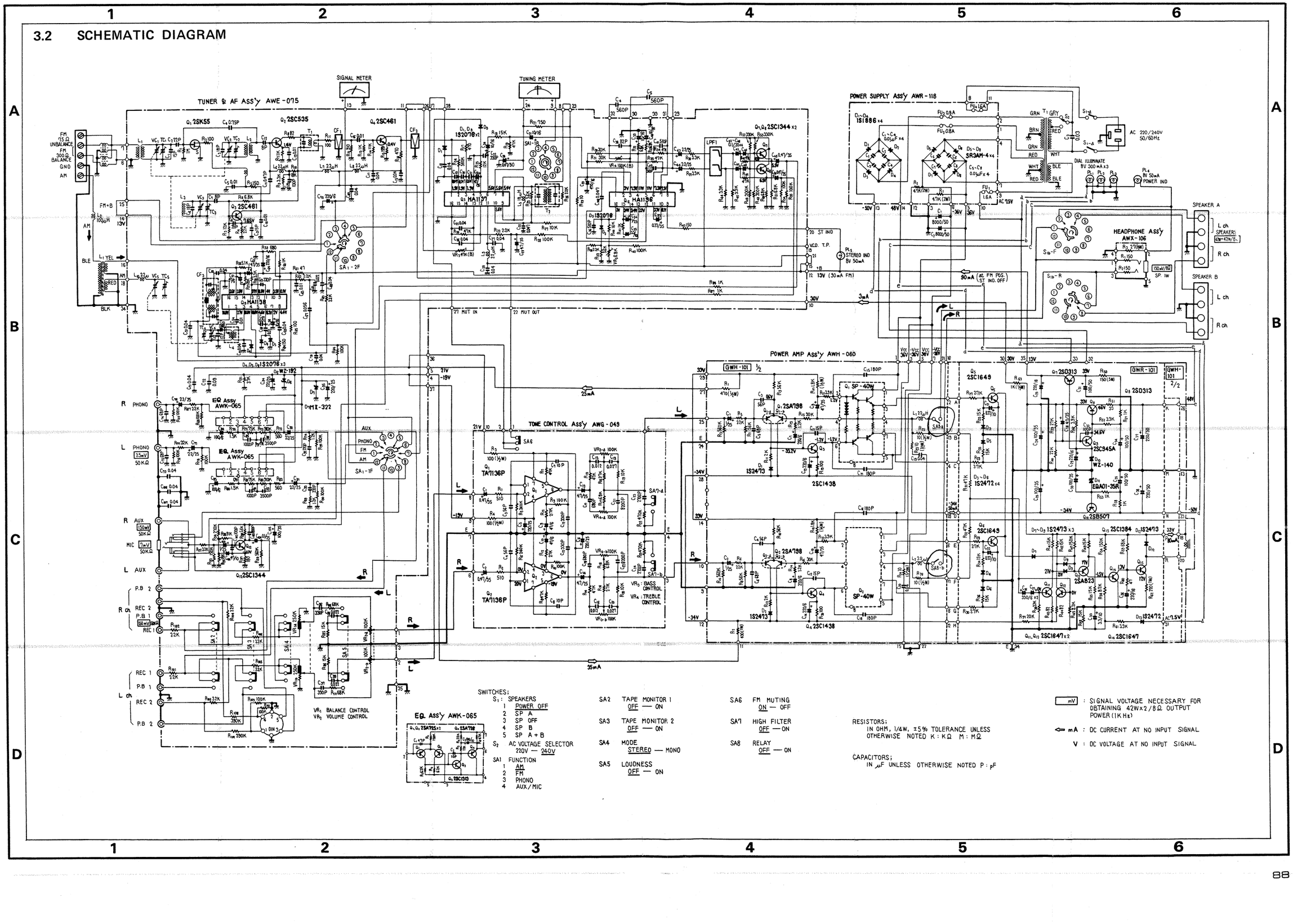
3. MODEL SX-650/HG

NOTE:
Parts indicated in green type cannot be supplied.

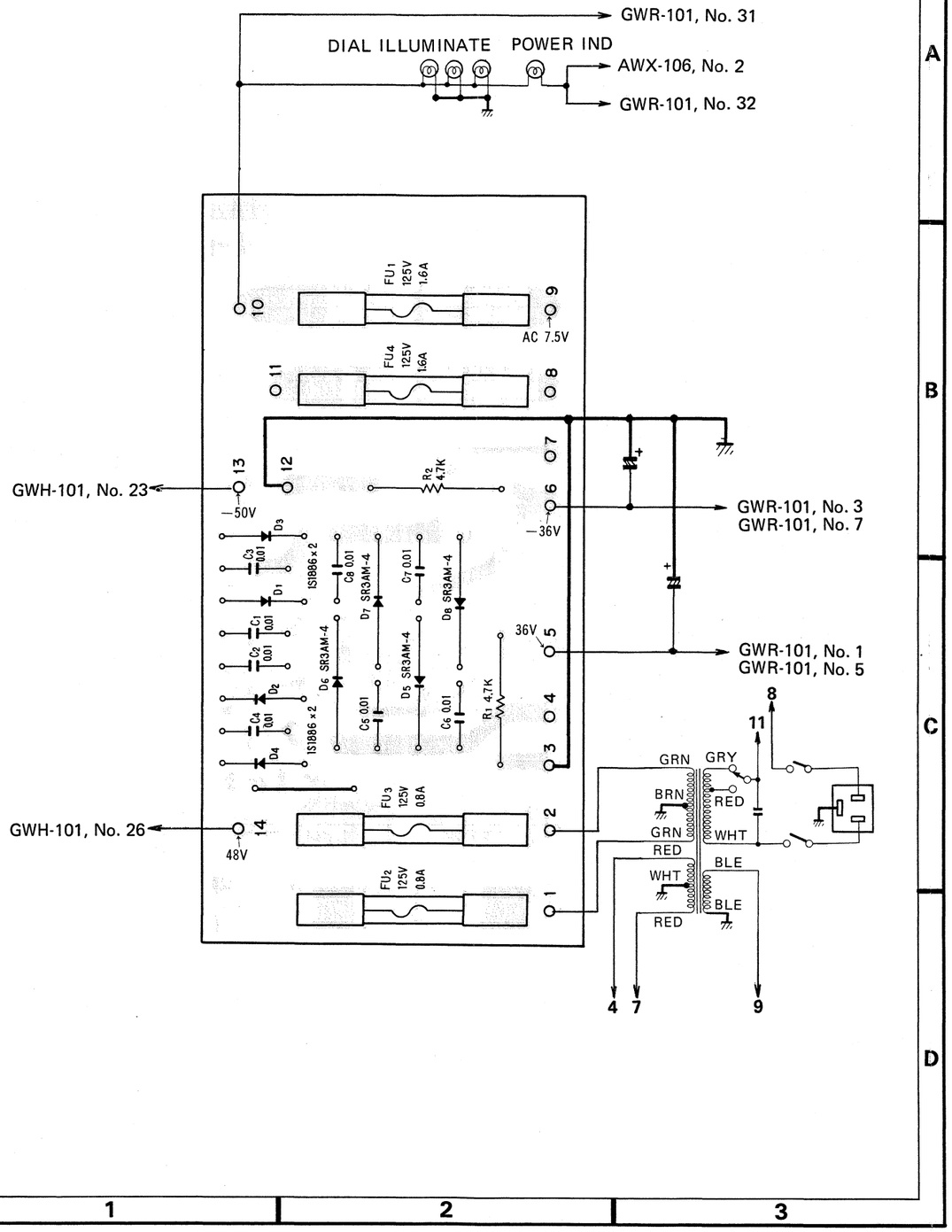
3.1 REAR PANEL

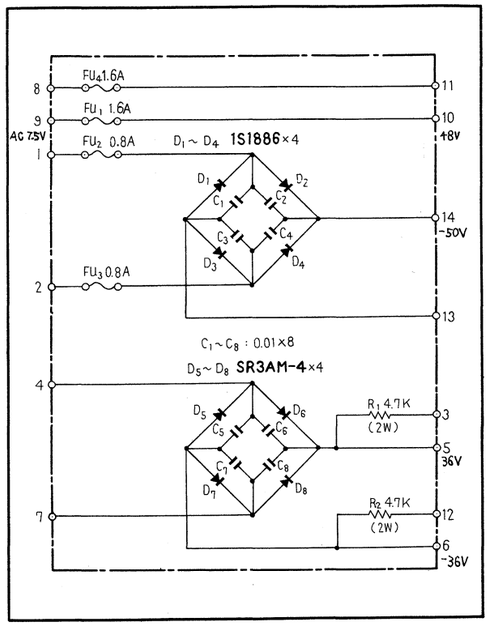


3.2 SCHEMATIC DIAGRAM



3.3 POWER SUPPLY ASSEMBLY (AWR-118)





Parts List

SEMICONDUCTORS

Symbol	Description	Part No.
D1	Diode	1S1886 (S1B01-02)
D2	Diode	1S1886 (S1B01-02)
D3	Diode	1S1886 (S1B01-02)
D4	Diode	1S1886 (S1B01-02)
D5	Diode	SR3AM-4
D6	Diode	SR3AM-4
D7	Diode	SR3AM-4
D8	Diode	SR3AM-4

OTHERS

Symbol	Description	Part No.
	Fuse clip	AKR-013

CAPACITORS

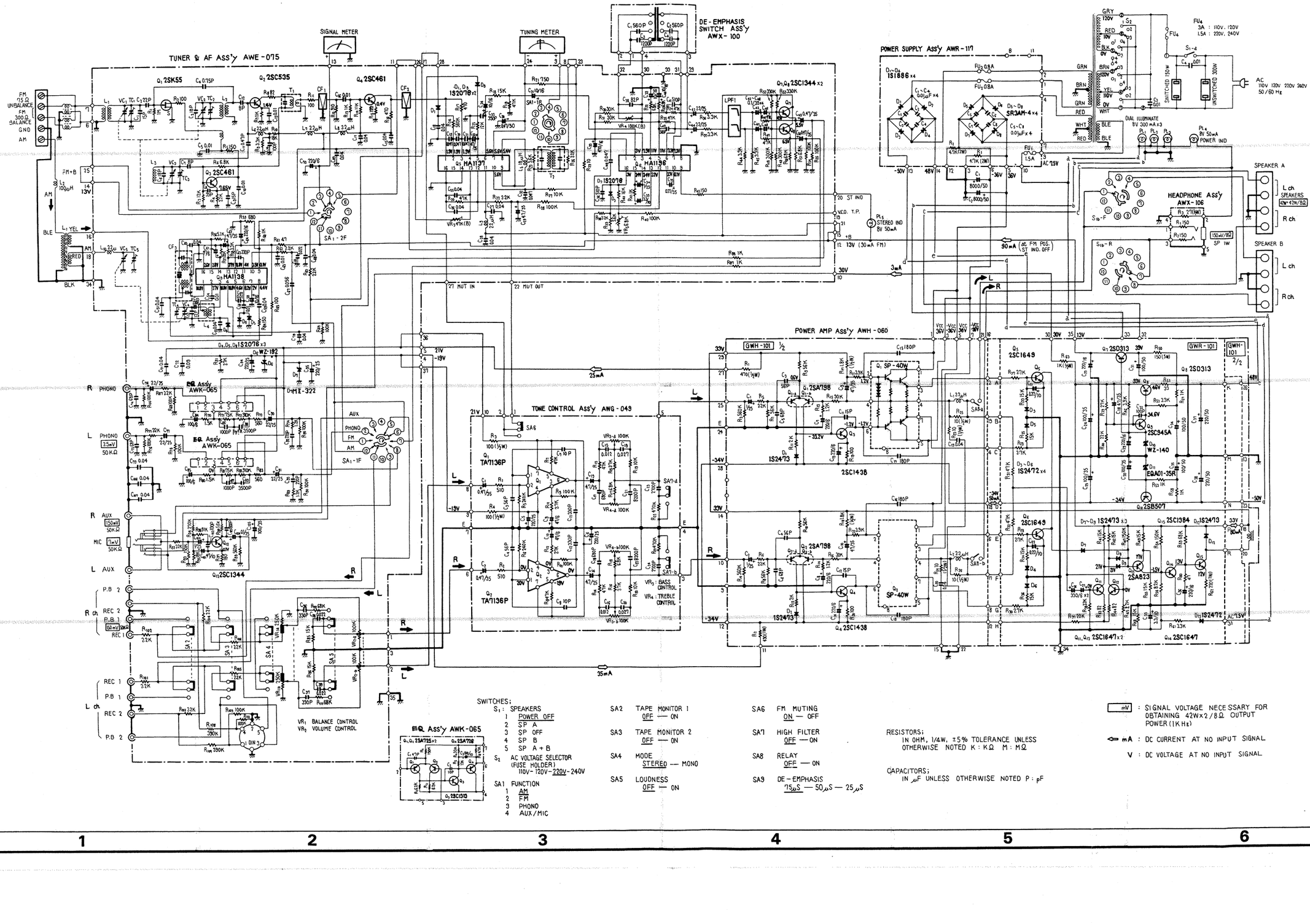
Symbol	Description			Part No.
C1	Ceramic	0.01	150V	ACG-004-0
C2	Ceramic	0.01	150V	ACG-004-0
C3	Ceramic	0.01	150V	ACG-004-0
C4	Ceramic	0.01	150V	ACG-004-0
C5	Ceramic	0.01	150V	ACG-004-0
C6	Ceramic	0.01	150V	ACG-004-0
C7	Ceramic	0.01	150V	ACG-004-0
C8	Ceramic	0.01	150V	ACG-004-0

RESISTORS

Symbol	Description			Part No.
R1	Metal oxide	4.7k	2W	RS2P 472K
R2	Metal oxide	4.7k	2W	RS2P 472K

4. MODEL SX-650/S

4.1 SCHEMATIC DIAGRAM



SWITCHES;
- S_1: SPEAKERS — 1 OFF; 2 SP A; 3 SP OFF; 4 SP B; 5 SP A+B
- S_2 AC VOLTAGE SELECTOR (FUSE HOLDER) 110V-120V-220V-240V
- SA1 FUNCTION — 1 AM; 2 FM; 3 PHONO; 4 AUX/MIC
- SA2 TAPE MONITOR 1 — OFF — ON
- SA3 TAPE MONITOR 2 — OFF — ON
- SA4 MODE — STEREO — MONO
- SA5 LOUDNESS — OFF — ON
- SA6 FM MUTING — ON — OFF
- SA7 HIGH FILTER — OFF — ON
- SA8 RELAY — OFF — ON
- SA9 DE-EMPHASIS — 75μS — 50μS — 25μS

RESISTORS; IN OHM, 1/4W, ±5% TOLERANCE UNLESS OTHERWISE NOTED K: KΩ M: MΩ

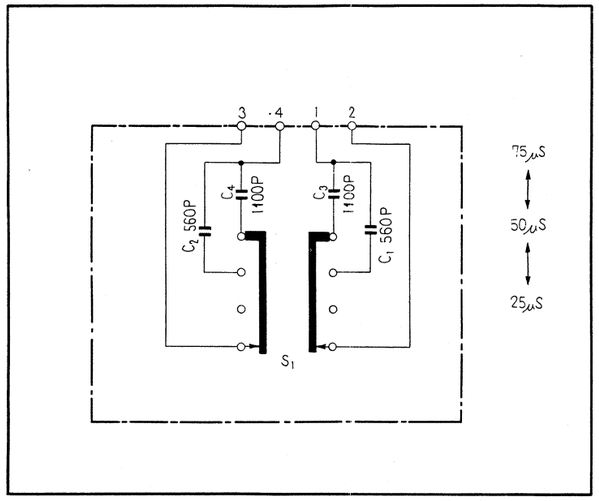
CAPACITORS; IN μF UNLESS OTHERWISE NOTED P: pF

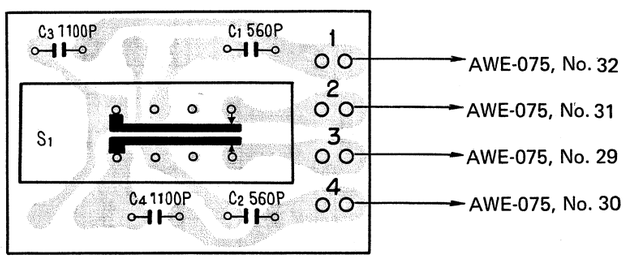
mV : SIGNAL VOLTAGE NECESSARY FOR OBTAINING 42W×2/8Ω OUTPUT POWER (1KHz)

⇐ mA : DC CURRENT AT NO INPUT SIGNAL

V : DC VOLTAGE AT NO INPUT SIGNAL

4.2 DE-EMPHASIS SWITCH ASSEMBLY (AWX-100)



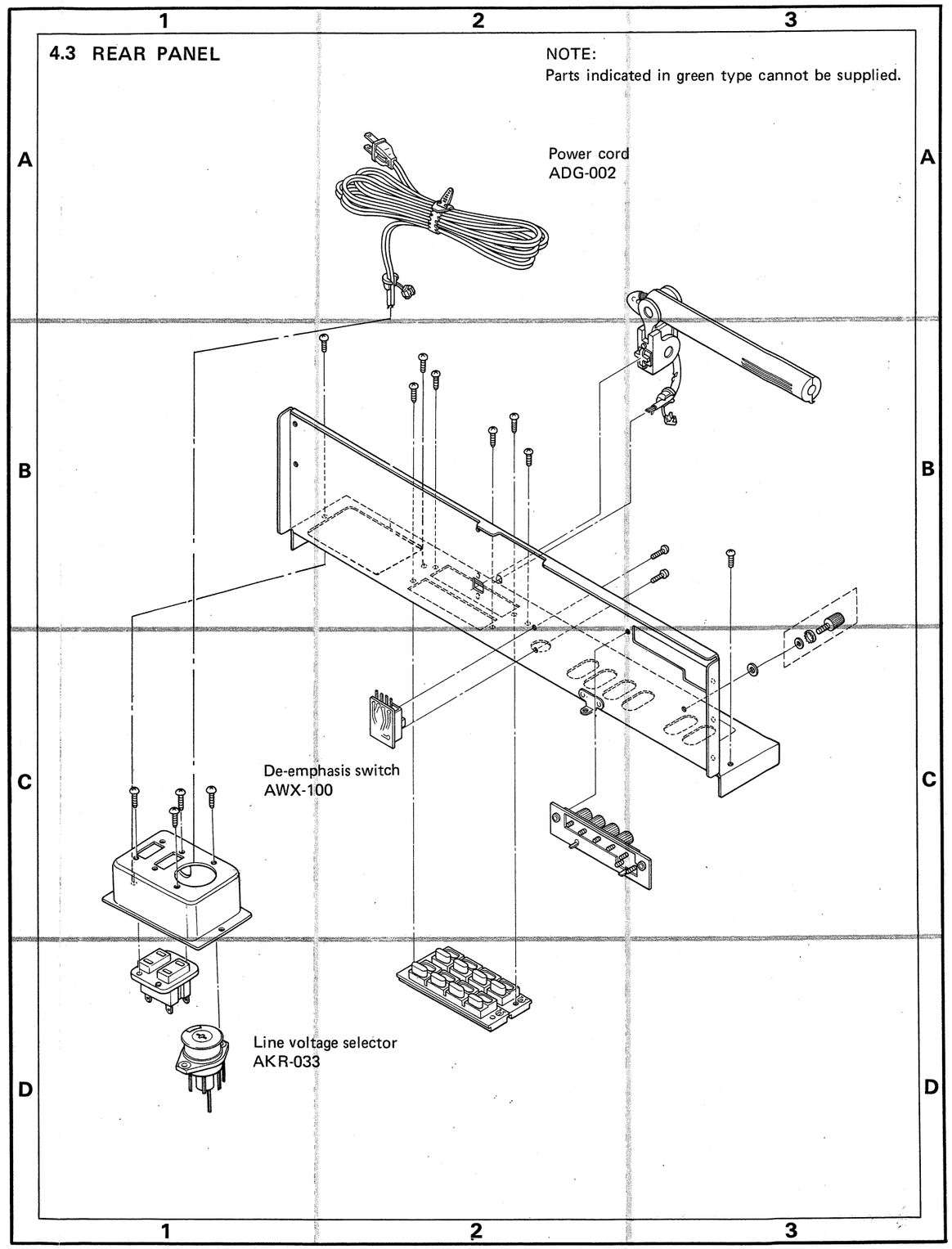


Parts List

Symbol	Description	Part No.
S1	Slide switch (DE-EMPHASIS)	ASH-017
C1	Polystyrene capacitor 560p 50V	CQSA 561J 50
C2	Polystyrene capacitor 560p 50V	CQSA 561J 50
C3	Mylar capacitor 0.0011 50V	CQMA 112J 50
C4	Mylar capacitor 0.0011 50V	CQMA 112J 50

4.3 REAR PANEL

NOTE:
Parts indicated in green type cannot be supplied.



AM/FM STEREO RECEIVER

SX-650 HG

TUNER & AF ASS'y AWE-075

SIGNAL METER

TUNING METER

TONE CONTROL ASS'y AWG-049

EQ Assy AWK-065

EQ ASS'y AWK-065

SWITCHES;

S_1: SPEAKERS
1 POWER OFF
2 SP A
3 SP OFF
4 SP B
5 SP A + B

S_2 AC VOLTAGE SELECTOR
220V — 240V

SA1 FUNCTION
1 AM
2 FM
3 PHONO
4 AUX/MIC

SA2 TAPE MONITOR 1
OFF — ON

SA3 TAPE MONITOR 2
OFF — ON

SA4 MODE
STEREO — MONO

SA5 LOUDNESS
OFF — ON

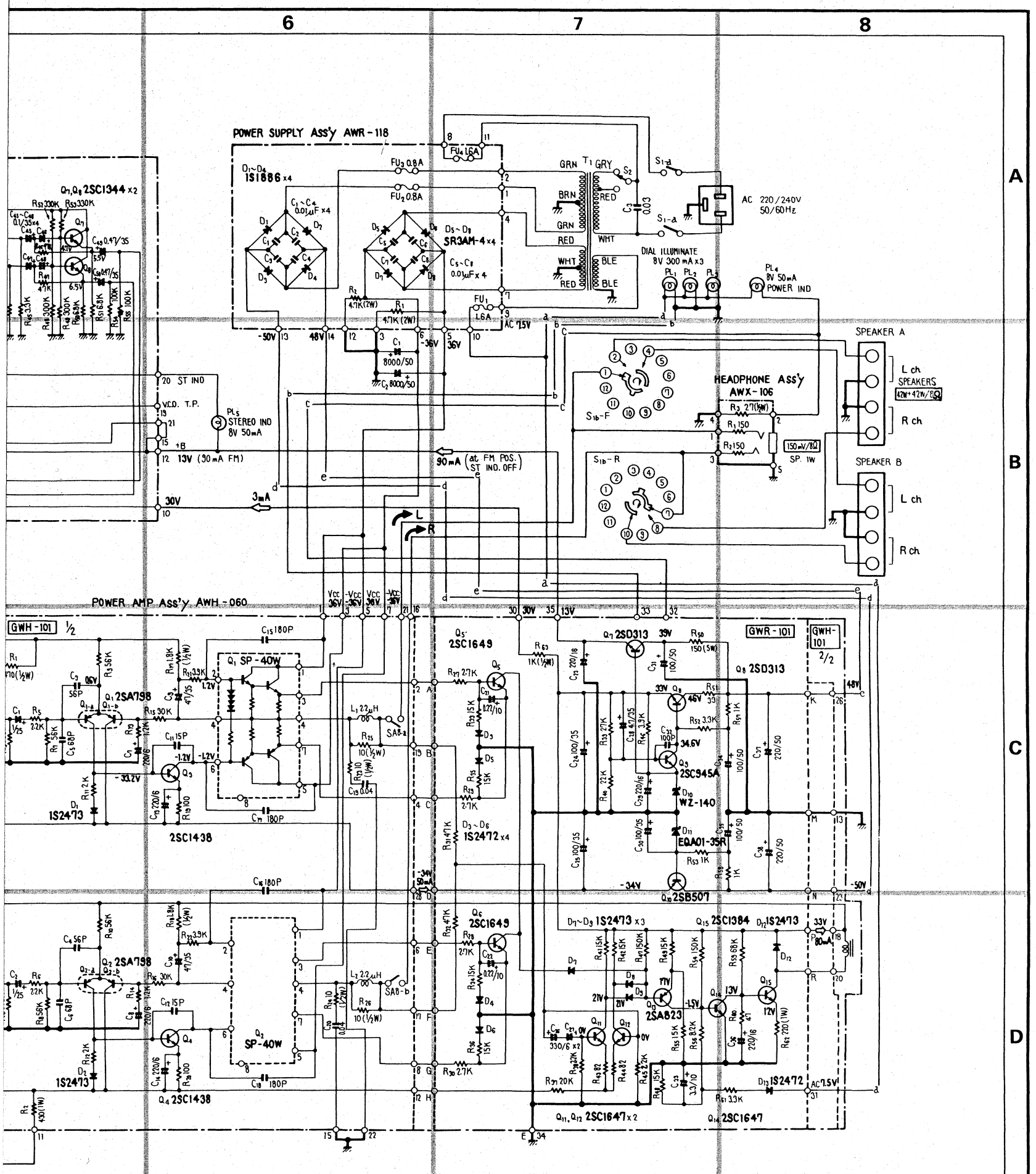
SA6

SA7

SA8

VR1 BALANCE CONTROL
VR2 VOLUME CONTROL

PIONEER


POWER SUPPLY ASS'y AWR-118
D1~D4 1S1886 x4
C1~C4 0.01μF x4
D5~D8 SR3AM-4 x4
C5~C8 0.01μF x4
FU3 0.8A
FU2 0.8A
FU4 1.6A
FU1 1.6A
T1
S1-a
S1-a
S2
C3 0.03
AC 220/240V 50/60Hz
DIAL ILLUMINATE 8V 300mA x3
PL1 PL2 PL3
PL4 8V 50mA POWER IND
R2 4.7K(2W)
R1 4.7K(2W)
C1 8000/50
C2 8000/50
-50V
48V
-36V
36V
AC 15V
Q7,Q8 2SC1344 x2
20 ST IND
VCO. T.P.
PL5 STEREO IND 8V 50mA
+B
12 13V (30mA FM)
30V
3mA
90mA (at FM POS. ST IND. OFF)
SPEAKER A
L ch
SPEAKERS 42W+42W/8Ω
R ch
SPEAKER B
L ch
R ch
HEADPHONE ASS'y AWX-106
S1b-F
S1b-R
R3 27(½W)
R1 150
R2 150
150mV/8Ω
SP. 1W
L
R
POWER AMP ASS'y AWH-060
GWH-101 1/2
GWH-101 2/2
GWR-101
Vcc 36V
-Vcc -36V
Q1 SP-40W
Q1 2SA798
Q3 2SC1438
D1 1S2473
Q2 SP-40W
Q2 2SA798
Q4 2SC1438
D2 1S2473
Q5 2SC1649
Q6 2SC1649
D3~D6 1S2472 x4
Q7 2SD313
Q8 2SD313
Q9 2SC945A
Q10 2SB507
D10 WZ-140
D11 EQA01-35R
D7~D9 1S2473 x3
Q15 2SC1384
D12 1S2473
Q16 2SA823
Q11,Q12 2SC1647 x2
Q14 2SC1647
D13 1S2472
AC 7.5V
SA6 FM MUTING ON — OFF
SA7 HIGH FILTER OFF — ON
SA8 RELAY OFF — ON
RESISTORS;
IN OHM, 1/4W, ±5% TOLERANCE UNLESS OTHERWISE NOTED K : KΩ M : MΩ
CAPACITORS;
IN μF UNLESS OTHERWISE NOTED P : pF
mV : SIGNAL VOLTAGE NECESSARY FOR OBTAINING 42W×2/8Ω OUTPUT POWER (1KHz)
⇦ mA : DC CURRENT AT NO INPUT SIGNAL
V : DC VOLTAGE AT NO INPUT SIGNAL

AM/FM STEREO RECEIVER

SX-650 S

SWITCHES;

S_1 : SPEAKERS
- 1 POWER OFF
- 2 SP A
- 3 SP OFF
- 4 SP B
- 5 SP A + B

S_2 AC VOLTAGE SELECTOR (FUSE HOLDER)
110V - 120V - 220V - 240V

SA1 FUNCTION
- 1 AM
- 2 FM
- 3 PHONO
- 4 AUX/MIC

SA2 TAPE MONITOR 1 — OFF — ON

SA3 TAPE MONITOR 2 — OFF — ON

SA4 MODE — STEREO — MONO

SA5 LOUDNESS — OFF — ON

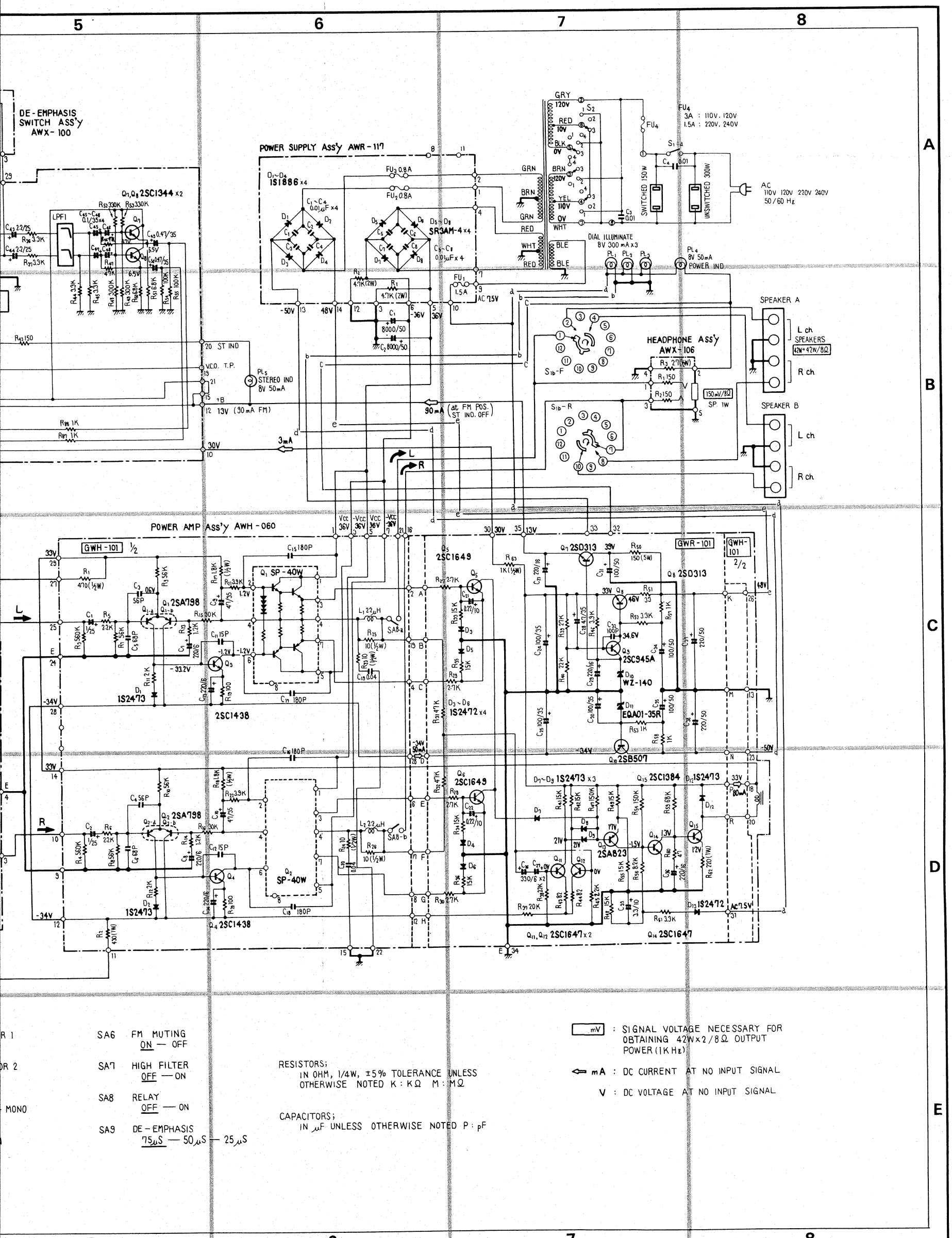
SA6

SA7

SA8

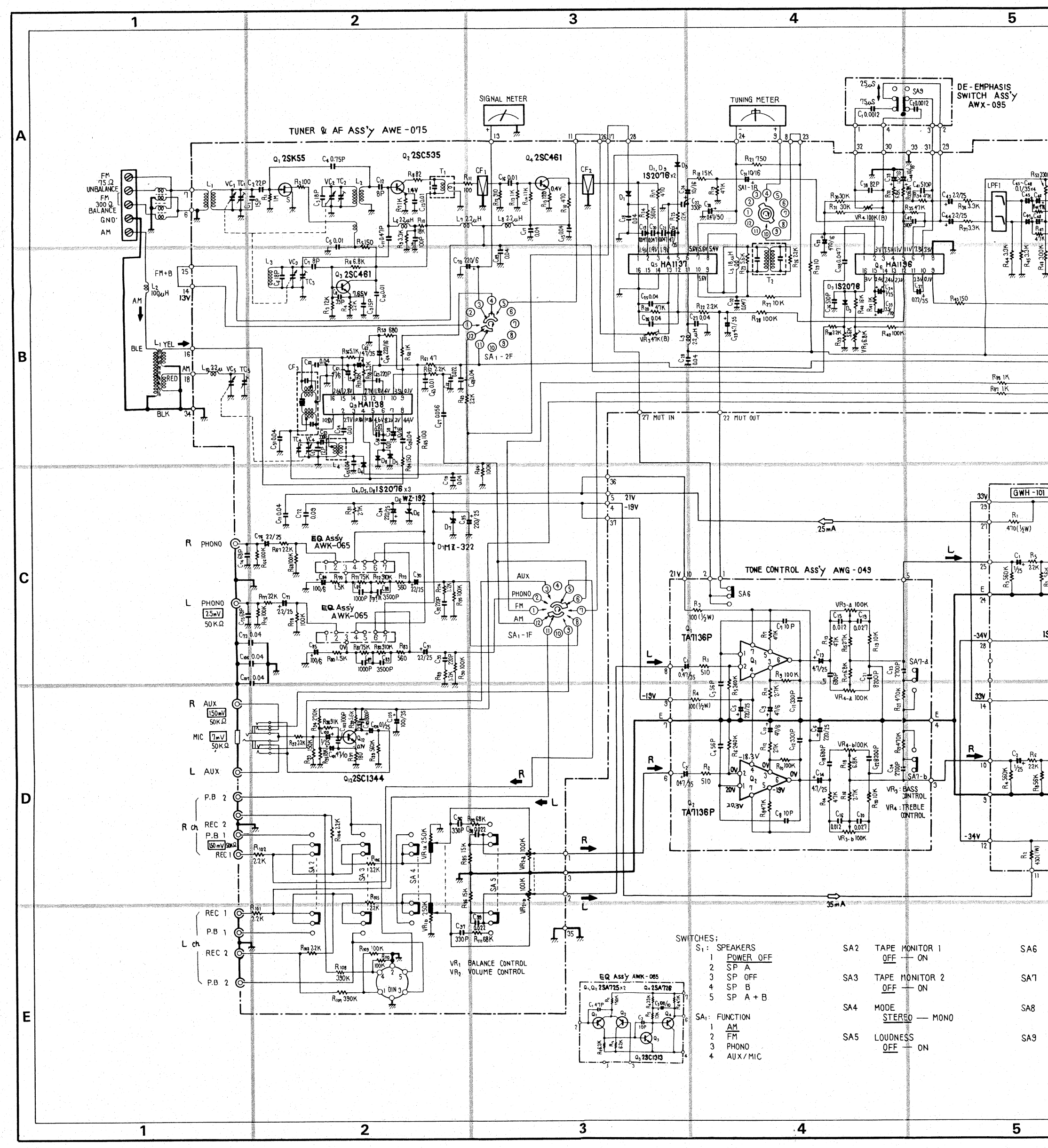
SA9

PIONEER

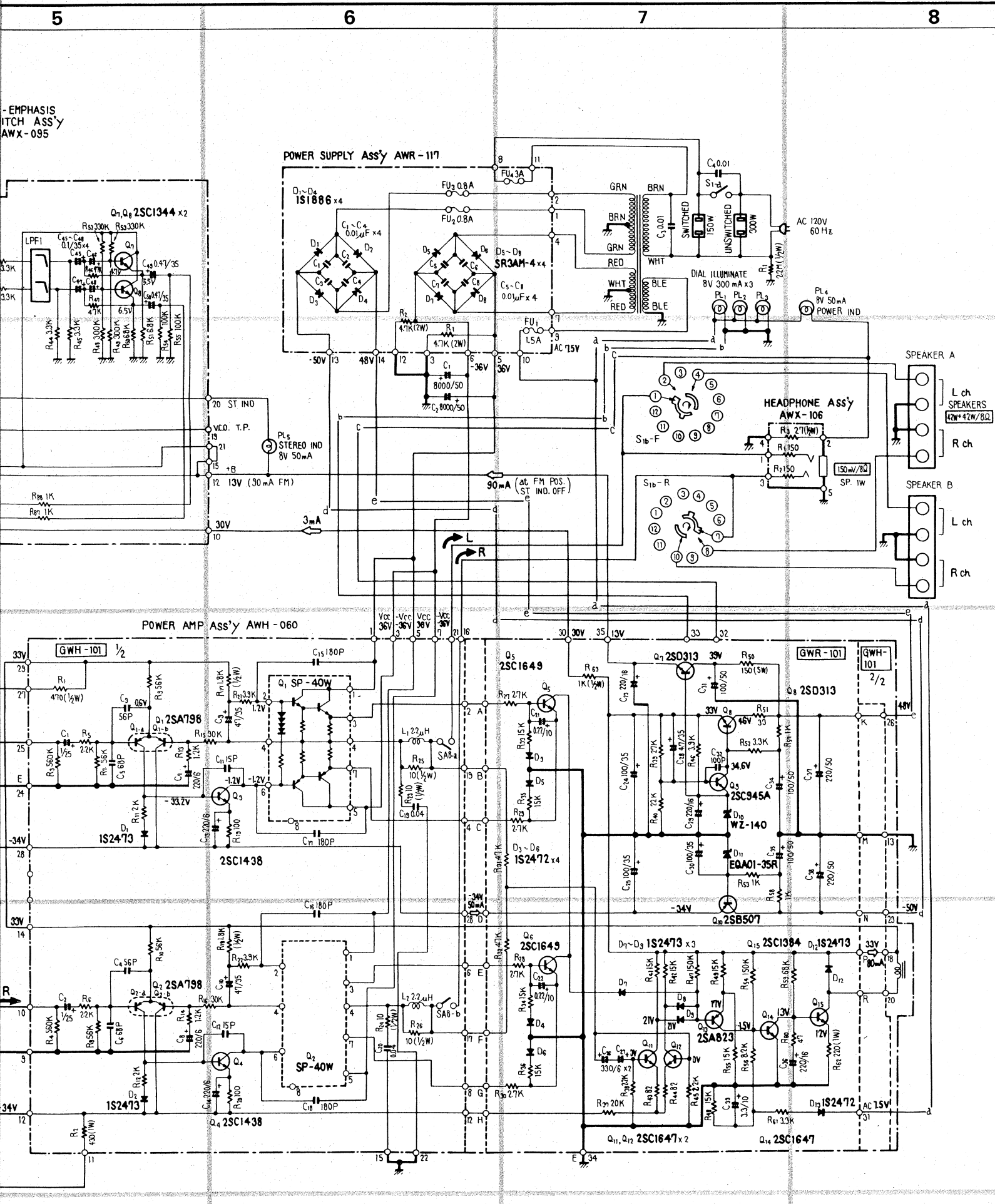

5
6
7
8
A
B
C
D
E
DE-EMPHASIS SWITCH ASS'y AWX-100
POWER SUPPLY ASS'y AWR-117
D1~D4 1S1886 x4
D5~D8 SR3AM-4 x4
FU3 0.8A
FU2 0.8A
FU1 1.5A
FU4 3A : 110V. 120V 1.5A : 220V. 240V
GRY 120V
RED 10V
BLK 0V
BRN 120V
YEL 110V
WHT 0V
GRN
BRN
RED
WHT
BLE
SWITCHED 150W
UNSWITCHED 300W
AC 110V 120V 220V 240V 50/60 Hz
DIAL ILLUMINATE 8V 300mA x3
PL4 8V 50mA POWER IND
SPEAKER A
L ch SPEAKERS 42W+42W/8Ω
R ch
SPEAKER B
L ch
R ch
HEADPHONE ASS'y AWX-106
150mV/8Ω SP. 1W
20 ST IND
VCO. T.P.
PL5 STEREO IND 8V 50mA
+B
13V (30mA FM)
90mA (at FM POS. ST IND. OFF)
3mA
30V
-50V
48V
36V
AC 7.5V
POWER AMP ASS'y AWH-060
GWH-101 1/2
GWR-101
GWH-101 2/2
Q1 SP-40W
Q2 SP-40W
Q1 2SA798
Q2 2SA798
Q3 2SC1438
Q4 2SC1438
Q5 2SC1649
Q6 2SC1649
Q7 2SD313
Q8 2SD313
Q9 2SC945A
Q10 2SB507
Q11, Q12 2SC1647 x2
Q13 2SC1384
Q14 2SA823
Q15 2SC1384
Q16 2SC1647
D1 1S2473
D2 1S2473
D3~D6 1S2472 x4
D7~D9 1S2473 x3
D10 WZ-140
D11 EQA01-35R
D12 1S2473
D13 1S2472
Q7, Q8 2SC1344 x2
LPF1
SA6 FM MUTING ON — OFF
SA7 HIGH FILTER OFF — ON
SA8 RELAY OFF — ON
SA9 DE-EMPHASIS 75μS — 50μS — 25μS
RESISTORS; IN OHM, 1/4W, ±5% TOLERANCE UNLESS OTHERWISE NOTED K : KΩ M : MΩ
CAPACITORS; IN μF UNLESS OTHERWISE NOTED P : pF
mV : SIGNAL VOLTAGE NECESSARY FOR OBTAINING 42W×2/8Ω OUTPUT POWER (1KHz)
mA : DC CURRENT AT NO INPUT SIGNAL
V : DC VOLTAGE AT NO INPUT SIGNAL

AM/FM STEREO RECEIVER

SX-650 KU KC



PIONEER


- EMPHASIS
ITCH ASS'y
AWX-095
POWER SUPPLY ASS'y AWR-117
D1~D4 1S1886 x4
FU1 1.5A
FU2 0.8A
FU3 0.8A
FU4 3A
C1~C4 0.01μF x4
D5~D8 SR3AM-4 x4
C5~C8 0.01μF x4
C1 8000/50
C2 8000/50
R1 4.7K (2W)
R2 4.7K (2W)
GRN
BRN
RED
WHT
BLE
C3 0.01
S1-d
SWITCHED 150W
UNSWITCHED 300W
AC 120V 60Hz
R11 22K (1/2W)
DIAL ILLUMINATE 8V 300mA x3
PL1 PL2 PL3
PL4 8V 50mA POWER IND
AC 7.5V
-50V
48V
-36V
36V
Q7,Q8 2SC1344 x2
LPF1
R52 330K
R53 330K
C45~C48 0.1/35 x4
C49 0.47/35
C50 0.47/35
R49 4.7K
R50 4.7K
6.5V
5.5V
R44 3.3K
R45 3.3K
R46 300K
R47 300K
R48 68K
R51 6.8K
R54 100K
R55 100K
20 ST IND
VCO. T.P.
PL5 STEREO IND 8V 50mA
+B
12 13V (30mA FM)
90mA (at FM POS. ST IND. OFF)
3mA
30V
R99 1K
R91 1K
L ch SPEAKERS 42W+42W/8Ω
R ch
SPEAKER A
SPEAKER B
HEADPHONE ASS'y AWX-106
R3 27(1/4W)
R1 150
R2 150
150mV/8Ω
SP. 1W
S1b-F
S1b-R
POWER AMP ASS'y AWH-060
GWH-101 1/2
GWR-101
GWH-101 2/2
Q1 SP-40W
Q2 SP-40W
Q1 2SA798
Q2 2SA798
Q3 2SC1438
Q4 2SC1438
D1 1S2473
D2 1S2473
Q5 2SC1649
Q6 2SC1649
Q7 2SD313
Q8 2SD313
Q9 2SC945A
Q10 2SB507
D10 WZ-140
D11 EQA01-35R
D3~D6 1S2472 x4
D7~D9 1S2473 x3
Q13 2SA823
Q15 2SC1384
D12 1S2473
D13 1S2472
Q11,Q12 2SC1647 x2
Q14 2SC1647
L1 2.2μH
L2 2.2μH
SA6-a
SA6-b
L
R
-34V 50mA
33V 80mA
-1.2V
-33.2V
2V
17V
13V
12V
-1.5V
0V
-34V
SA6 FM MUTING ON — OFF
SA7 HIGH FILTER OFF — ON
SA8 RELAY OFF — ON
SA9 DE-EMPHASIS 75μS — 25μS
RESISTORS;
IN OHM, 1/4W, ±5% TOLERANCE UNLESS OTHERWISE NOTED K : KΩ M : MΩ
CAPACITORS;
IN μF UNLESS OTHERWISE NOTED P : pF
mV : SIGNAL VOLTAGE NECESSARY FOR OBTAINING 42W×2/8Ω OUTPUT POWER (1KHz)
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